Clinical Medicine

volume 8, number 11

November
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Prostatectomy: An Explanation for the Patient

SAMUEL YOCHELSON, Ph.D., M.D.,* *Washington, D.C.*

►*Written for your patient about to undergo such an operation by a psychiatrist who has himself recently undergone a prostatectomy, this article gives a few basic facts about his condition and what he may expect prior to and after the operation. Reprints may be obtained from the author or from Clinical Medicine.*◄

Now that your urologist has recommended an operation on your prostate gland, you are wondering what caused your condition and what you can expect in the future. The same is probably true if you are experiencing certain symptoms that suggest prostate trouble and are considering seeing your physician about them. You will want to know the bodily structures which require removal, the procedures to be employed, what postoperative course can be expected, the symptoms and minor complications which may occur after you leave the hospital, and the results you can expect.

*St. Elizabeth's Hospital.

The chances are your symptoms set in so gradually that you paid little attention to them. You began to have some difficulty in starting the urinary stream, and in time observed that its force had lessened and that you were dribbling after you thought you had finished. You noticed an increasing desire to urinate soon after you had voided. Voiding became more frequent, and a sense of urgency to void occasionally causes a urinary accident. Not only have you found it necessary to void at night, at first only once, now perhaps three, four or more times, but your former excellent control of the voiding function probably has diminished. There also may have been a burning sensation while voiding, often referred to the end of the penis. And you may have had low backache.

The prostate gland, composed of three lobes, two lateral and one median, secretes a fluid in

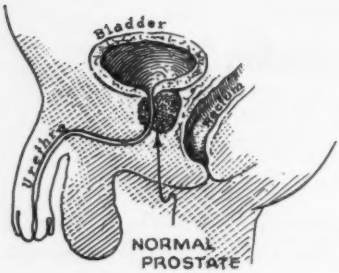

FIGURE 1

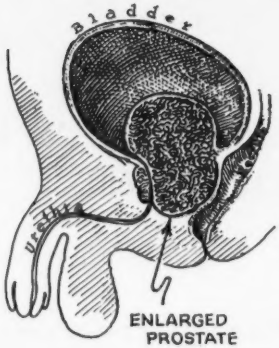

FIGURE 2

which the spermatozoa are transported. It is located beneath the bladder, and surrounds the tube leading from the bladder, the urethra. It is rather like a miniature doughnut, with the bladder resting upon it and the urethra passing through the hole. Its rear portion can be examined by introducing a finger into the rectum: your physician has examined your prostate in this manner.

When the gland is of normal size (Figure 1), there is no interference with the urinary flow from the bladder through the urethra; if it becomes enlarged, the urinary flow may be obstructed.

Figure 2 shows how an enlarged prostate may obstruct the flow of urine from the bladder. As a result of urine retention, the bladder stretches and dilates. When the obstruction is only partial, the urine will travel through the urethra, but in a smaller stream with lessened force; the stream may stop and start several times during urination, especially on arising in the morning. Whether the obstruction is partial or complete, the bladder stretches and loses some of its tone, so that it cannot expel all the urine.

The purpose of the prostate operation is to remove the obstruction by removing the enlarged portion or portions of the gland. Strictly speaking, a "prostatectomy" is the removal of the entire gland, but this is a misnomer: only the enlargements, known as "adenomas," will be removed. The normal prostate, which secretes the fluid in which the spermatozoa are bathed and transported, will be left intact,

and the prostatic function will continue as it did prior to enlargement of the gland.

Because certain types of enlargement cannot be detected rectally, it will be necessary to introduce a cystoscope, through which the surgeon inspects directly the inside of the bladder and the urethra, and so determines the degree of obstruction caused by the prostate and the tone of the bladder. With modern anesthesia and sedatives, this procedure will cause you little discomfort, mainly afterward.

Some of these studies will be performed in the surgeon's office, but it is probable that you will spend two or three days in the hospital for the others, as well as for additional blood tests that are required prior to any surgical procedure. However, if your prostate has been enlarged for some time with considerable residual urine and a high degree of back pressure, normal bladder size and kidney function may have to be restored before the operation: this is why the cystoscopy and intravenous pyelogram were performed and a blood urea sample was taken. In this event it may be necessary for you to spend several days or even a couple of weeks in the hospital so that the bladder can be continuously drained.

To prevent the urine from accumulating, a tube, often a Foley catheter, will be introduced into the bladder through the urethra and permitted to remain there continuously. The other end of the catheter is inserted into a bottle to collect the urine. Gradually the bladder will decrease in size and increase in tone, making it simpler for the surgeon to operate by reducing the amount of surgical bleeding. If kidney function must be improved this catheter drainage also facilitates proper kidney excretion.

The chances are that some infection has been found and that you are receiving an antibiotic or other antibacterial medication to combat it; these may be continued during the time the catheter remains inserted. You will also be asked to drink considerable quantities of water while the catheter is present, both before and after surgery. It is very important that you cooperate with this instruction to reduce the concentration of the urine and to promote better flushing.

The night before your operation, the lower part of your body will be shaved, perhaps even up to the nipple line. This does not mean that the surgical field will extend to the upper limit of the shaved area. This area will be wide to insure cleanliness and to avoid a possible route of infection. You will be given an enema to make the operation less complicated, and medication for a

good night's sleep, even though you may be a good sleeper. An hour or so before the event, you will receive further medication, probably by injection, to put you at ease. It will probably make you drowsy and produce considerable dryness of the throat. Both are advantageous for surgery, the dryness of your throat indicating a decreased flow of saliva which helps to keep the air passages clear and reduces the possibility of congestion in the lungs, as well as nausea and vomiting from the swallowed fluid.

You may be concerned about the anesthetic. You may be apprehensive that once asleep from it, you may not wake up. You may have heard stories about masks preventing proper breathing, or about people becoming very excited by the anesthesia. But practices in anesthesia have improved greatly through the years, particularly during the last two decades. Anesthetists today are very highly trained specialists, and modern anesthetics are increasingly safe. For your operation you will most probably be given an injection in a vein of your arm which will put you to sleep so rapidly that it will appear to you to be instantaneous. Actually, it is almost a certainty that you will be asleep before the needle is removed.

The anesthetist will interview you to ask pertinent questions which will assist him in providing the proper anesthesia, almost always general, i.e., sleep-producing. And for two, three or more hours after the operation has been completed, you will be closely attended in a recovery room where your recovery from the anesthesia will be facilitated. In all probability you will not be aware of this or even conscious until you are back in your own room.

Also, you may now have two catheters, one exiting from your abdominal wound, both draining bloody urine. This is normal and should cause no alarm or anxiety. Day by day, the urine from both catheters becomes less blood tinged. Then, after it has become more nearly the color of normal urine, it may suddenly become more bloody. This slight bleeding from small clots breaking off from the wound may last from an hour to a day and is indicative of the healing process, not of a worsening condition.

During this time, and especially when medication is reduced, you may experience spasms of pain low down in the region of the urethra and extending to the abdomen in the area of the incision. These spasms will appear in waves and will pass quickly, generally within a minute. The more composed you are the less frightened you will be, and the more quickly they will pass.

Above all, they do not mean that anything has gone wrong but just the reverse: the bladder is recovering its tone and normal ability to expel urine or any foreign body like the catheter.

During the first two or three days you will be instructed to move from side to side in order to give your lungs, particularly the bases, an opportunity to expand completely. The operative site will not be weakened nor the tubes dislodged as a result of such movement. At this time you will also be asked to sit up in bed and dangle your legs, and within another two or three days, to walk slowly with the aid of a nurse to a chair, where you will be allowed to sit for a while. Again, do not worry about dislodging the catheters. During the same two or three days your temperature, pulse and blood pressure will be taken at regular intervals. This is not done because you have any complication with respect to blood pressure.

After a few days one of the tubes will be removed. Some surgeons routinely remove the suprapubic catheter first (when the lack of blood clots indicates that the wound is well healed), leaving the Foley in to further tone the bladder. Others test both catheters to determine which should remain in terms of bladder tone and healing. The time for the removal of the second catheter varies from a day to two weeks, depending upon the blood content of the draining urine, and the expected ability to urinate normally without the tube.

You must realize again that the healing process is not yet complete. You will notice that the urinary stream is fuller. Many if not all of your earlier symptoms will continue: urination may be frequent, control may not be good, you may have to void a few times at night, and burning may be constant. This is not to be construed as lack of success of the operation. Rather it is an indication that healing is taking place. You will observe that the urine is very cloudy. This is because tissue shreds from the site of the operation are being sloughed off, and because infection is still present. The infection is inevitable but temporary.

In the course of your convalescence, for two or three weeks or even a month some drainage may continue from the site where the suprapubic catheter was inserted into the abdominal wound. The drainage has nothing to do with the prostate surgery itself: it is only a minor postoperative complication caused by a slight inflammation of the abdominal wall, and will be treated with various drugs or perhaps hot

compresses.

While the primary surgery is performed on the prostate gland, many surgeons at the same time will operate on the tubes leading from each testicle. The operation called a vasectomy is done to prevent any infection from spreading into the testicles. Up to a month or two following a vasectomy, there will be tenderness, soreness and vague discomfort in the region of the testicles. If you feel them, you will find hard, sensitive, pea-sized swellings where the surgery was performed.

It is extremely important for you to understand what a vasectomy really means to you. By tying off the tubes leading from the testicles, the spermatozoa are prevented from flowing into the urethra and so out of the body. In other words, the operation results in sterility, although both testicles are still producing sperm and the prostate is producing prostatic fluid, in which no spermatozoa are present. Thus it would be impossible for you to impregnate a woman.

The chances are overwhelming that at this age there is no need or desire to become a father, and thus no reason to avoid sterility if your health, even life is at stake. *And there will be no other change in the pattern of sexual life.* Many men in their 60's and 70's are sexually active, finding normal release and relief of tension in the sexual act. By itself, a vasectomy has no effect on the ability of the penis to become erect and then flaccid after ejaculation, or on the pleasure experienced during orgasm: the only difference will be that the secretions may not flow from the penis. You need not expect any alteration in your sexual practice. For several weeks after surgery has been completed, around the incision you may experience vague skin sensations and tenderness which will disappear in time. It is very important that you do not lift or tug during the next several weeks to insure complete healing of the abdominal wound.

You will be asked to see your surgeon at his office about once a week after you have returned home. At these times your abdominal wound and urine will be examined. Evidences of infection will be present in the urine because the tissues require from several weeks to three months to heal completely. Until healing is complete and the infection controlled, you will be required to take some kind of medication. Some urologists continue the medication for some time after the urine has become clear.

If this is to be your first surgical experience, keep in mind that during the first postopera-

tive week you will be nursed, bathed, fed, assisted in walking, and generally taken care of in a way you have not experienced at any time during your adult years. It is important that you cooperate fully and heed your physician's instructions, which are designed to mobilize you at a reasonable pace.

My purpose in this discussion has been to contribute, largely from personal experience, to your better understanding of the whys and hows of your imminent or contemplated prostatectomy. In no way should it be considered a substitute for the professional advice of your family physician or urologist. For one thing, I have described only one of the surgical approaches to prostate surgery. Your surgeon may choose another technique, a transurethral operation, for example. Or he may prefer a perineal operation, which involves more extensive surgery in the area between the scrotum (the sac containing the testicles) and the rectum.

While many of the points in this paper are applicable also to the transurethral and perineal operations, there are special features relative to each. Consult your urologist about them and any unanswered questions that have occurred to you. He will be very pleased to provide you with simple, direct responses.◀

The Treatment of Burns

THOMAS E. LYNN, M.D., *Green Bay, Wisconsin*

►*The increasing number of thermal injuries and the possibility of atomic warfare have provoked interest in the problem of burn injuries. Treatment can be by the closed method, exposure method, saline baths, or aerosol sprays. Local infections followed by speticemia must be regarded as an imminent danger.*◄

The increasing number of thermal injuries and the possibility of atomic warfare have provoked interest in the problem of burn injuries. The principles of evaluation and treatment of the burn patient are presented.

Chief factors influencing prognosis in severe burns are age of the patient, extent and depth of the burn, degree of respiratory involvement, and general state of the patient.

Although improved methods of shock therapy have greatly reduced the incidence of death in patients with severe burns, many older persons still die after relatively small burns. Generalized arteriosclerosis and pre-existing cardiovascular-renal disease seem to be chiefly responsible. These factors make it exceedingly difficult to plan efficient and adequate fluid and electrolyte therapy; also, the stress reaction to injury in this group may be reduced or lacking after severe burns.

The clothing must be removed on admission to estimate the patient's weight and the extent of the burn; this allows calculation of the basic fluid and electrolyte needs. If a deep burn extends over more than 50 per cent of the body surface area, the likelihood of recovery is small with any therapy. Invasive infection or septicemia is the major lethal factor.

Involvement of the respiratory tract, usually associated with facial burns, must be recognized early so that fluid therapy can be kept at a minimum in order to prevent pulmonary edema. Oxygen inhalation, bronchodilators, removal of excessive phlegm and exudate (by intranasal catheter, suction, or occa-

sionally by tracheostomy), and vigorous antibiotic therapy are indicated. A tracheostomy may be greatly beneficial and therefore should be performed early.

Shock is usually present in varying degrees, depending on the time elapsed following the severe burn. It appears earlier in children than in adults having a corresponding extent of burn. As a rule, the longer and more profound the period of shock the poorer the prognosis.

Burn Shock

Shock should be suspected in patients with burns of more than 15 per cent of the body surface area. It is far better to anticipate and hence minimize the extent of shock than to be forced to vigorous methods after shock has developed. Most patients in incipient burn shock are apprehensive and, as the shock deepens, thirst becomes a prominent symptom. If the shock has remained untreated for several hours, the patient may be apathetic, stuporous, or even comatose. On admission, blood is drawn and hemoglobin concentration, hematocrit percentage, and hemolysis in the plasma determined.

An indwelling urinary catheter is inserted and the initial urine sample examined for the presence of hemoglobin breakdown products. Grossly bloody urine indicates a more severe and extensively deep burn than is apparent at once. It is mandatory that an accurate intake and output record be maintained.

The extent of the burn is estimated and recorded as soon as possible after admission. Usually the "rule of nines" will provide an adequate estimate for adults. (The head and neck, the left and right arms are each regarded as 9 per cent of the body surface area; each lower extremity and both the anterior and posterior trunk areas as 18 per cent each; and the perineum as one per cent). The tendency to overestimate the extent of burn must be avoided. More detailed charts should be referred to for estimation of burned areas in children.

A needle, No. 18 or larger, is inserted into an accessible vein. If the burn is extensive or if burn shock is already established, a suitable colloidal solution for shock therapy (plasma, plasma substitute, or whole blood) is started at once. Frequently a plastic needle or intravenous polyethylene catheter serves well. In shock due to burns, large amounts of blood, plasma, and extracellular fluid are unavailable because of actual external loss and rapid ex-

pansion of the extracellular compartment in the immediate area of the traumatic tissue. Plasma alone has been shown to be an inadequate replacement fluid because of the severe degree of anemia which often will develop in as short a time as 24 hours after injury.

Several programs for the maintenance of fluid and electrolyte balance of the severely burned patient have been developed. The Brooke Army Hospital Formula is satisfactory. The patient's weight in kilograms is multipled by the percentage of body surface area burned in order to estimate the amount of colloidal and electrolyte solutions lost. One-half cc. of colloid (blood, plasma, plasma substitute), and 1½ cc. of electrolyte solution (balanced solution, i.e., lactated Ringer's) per kilogram of body weight per burn percentage is recommended. A burn of over 50 per cent of the body surface should be considered a 50 per cent burn when the fluid calculations are being made. One-half of the fluid is administered during the first eight hours and ¼ during each succeeding eight-hour period. Vogel[1] recommends about ½ of the colloidal requirement as whole blood in burns of 30 per cent and about ¾ of the calculated blood in burns of 50 per cent of the body surface.

Moyer[2] has found that a well-cooled solution containing 3 Gm. of sodium chloride and 1.5 Gm. of sodium bicarbonate per liter can be administered orally and is well tolerated by many patients.

The hourly urine volume furnishes a good index for adequate fluid therapy and should be maintained between 30 and 50 cc. per hour during the first 24 hours. If renal shutdown is suspected, one liter of 5 per cent dextrose solution in water may be administered rapidly. If there is little or no response, the rate of flow should be sharply curtailed in order to not overload the extracellular compartment and consequently avoid pulmonary edema.

On the second day after the burn, about ½ of the initially-estimated fluids are required, on the third day the intake is further reduced. Spontaneous diuresis will begin, in adequately and vigorously treated patients, between the third and fifth postburn day. After 48 hours, therapy is guided almost exclusively by clinical signs and laboratory tests.

Although sodium is retained, the excretion of potassium continues in the immediate post-

1. Vogel, E. H., Jr., *GP*, 20:121-124,1959.

2. Moyer, C., cited by Womack, N. A., On Burns, Charles C Thomas, Springfield, Ill., 1953. Pp. 92-105.

burn period. If urinary output is adequate, 80 to 100 mEq. of potassium is given daily after the initial 48 hours. One must be very cautious to avoid an electrolyte imbalance during and immediately after the diuretic phase.

Treatment of Pain

A small superficial burn may be exquisitely painful, and there is a tendency to think that the pain will be magnified many times in a large deep burn. Actually, the pain in a severe burn is not great, but complications in the handling of this pain may develop. Cullen[3] advises one to attempt to differentiate between pain and marked apprehension; in the latter a hypnotic such as pentobarbital sodium* or amobarbital sodium† may be more advantageous. He further recommends the use of small doses (as little as 5 to 10 mg.) of morphine given intravenously, observing the reaction, and repeating the medication if and as necessary. The confused agitation of the patient may be due to circulatory collapse and anoxia, and morphine may accentuate the symptoms and condition. It is important not to aggravate the situation by excessive use of analgesics or hypnotics and to be aware of the marked degree of agitation that can occur with anoxia in these patients.

Care of the Wound

Often it is very difficult at the initial examination to determine the depth of skin destruction. Burns from hot water are generally superficial and heal readily, but, as the nerve endings are usually still intact in the skin, these burns are quite painful. Burns caused by actual flame are often deep, extensive, and less painful. If there is doubt one should treat the burn as if it were severe.

Closed Treatment of Burns

In 1942, Allen and Koch[4] described their closed treatment method for the severely burned patient. In this procedure, known as the occlusive pressure dressing method, an attempt is made to convert the open contaminated wound into a clean wound. The wound is washed gently with soap and sterile water and is covered with sterile strips of fine mesh gauze which have been impregnated with petrolatum, and an occlusive dressing of dry sterile gauze and mechanics waste is held in place

*Nembutal®, Abbott Laboratories, North Chicago, Illinois.
†Amytal®, Eli Lilly and Company, Indianapolis, Indiana.
3. Cullen, S., cited by Womack, N. A., On Burns, Charles C Thomas, Springfield, Ill., 1953. Pp. 18-29.

4. Allen, H. S., & Koch, S. L., *Surg. Gynec. & Obst.*, 74:914-924,1942.

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*J.A.M.A. *169*:41-45 (Jan. 3) 1959. 56461

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by an elastic bandage so that moderate pressure results. The extremity dressing is extended to the fingers and toes to minimize distal swelling. After 6 to 10 days the wound is examined. Usually at this time the superficial burn wound is healed and the deep full-thickness burn is treated with sterile moist dressings and debridement in preparation for early grafting. Surgical excision of the necrotic tissue on the face and neck is inadvisable because spontaneous separation will occur at those sites without debridement.

Exposure Treatment of Burns

The open treatment of the burn wound has the same objectives as the closed wound method. On admission, the patient is placed on a sterile or clean sheet. An attempt is made to immobilize the extremities, and, in circumferential burns, every effort is made to move the patient frequently in order to promote drying of the burned areas. Superficial burn wounds generally have a dry surface in 24 to 48 hours and are covered with a thin, light brown crust which gradually darkens. Full-thickness burns take some 72 hours to dry, and the crusts tend to be thicker and darker.

The advocates of this method claim that, if the wound becomes dry, early infection is reduced to a minimum, and severe second-degree burns may not be converted to full-thickness destruction. When the dry eschar cracks, the burn wound drains through the openings. If the dry eschar has not separated by the end of the third week, it may be excised and the wound grafted.

Blocker[5] has reported that the exposure method required less than half as much blood and sedation and hence the average hospital stay was reduced by ⅓. He advised the application of dressings, however, in cases of circumferential burns where adequate exposure would be difficult or impossible.

Other Methods

The use of saline baths in the treatment of burns has, particularly in Great Britain and Canada, proved of special value in second- and third-degree burns of the hands, flexor surfaces, and the perineum. The burned areas are immersed in a saline solution at body temperature for one-hour periods three times daily, and the patient is urged to move freely. Between baths, the wounds are covered with moist compresses. If the trunk is involved, the entire body is placed in a saline bath. The main

5. Blocker, T., cited by Womack, N. A., On Burns, Charles C Thomas, Springfield, Ill., 1953. Pp. 30-42, 154-163.

advantage lies in the continual removal of devitalized tissue.

Various aerosol sprays with varying medicaments have been used in an effort to obtain a burn wound covering, combat infection, and relieve pain. Initial reports are promising, and we have found them significantly helpful in treating burns of small areas. In regard to extensive deep burns, it is felt that the widespread use of these sprays must await more data.

Apparently one of the damaging factors in burn wounds is the presence of eschar which often becomes wet and infected and then sloughs. Often there is difficulty in removing this eschar. As an adjunct to surgical debridement, various enzymatic preparations, such as streptokinase-streptodornase* and crystalline trypsin†, have been used with some success. There is no substitute for good surgical debridement.

Homografts of skin have been used as emergency dressings for severe burns and may survive from three to 10 weeks. They may be lifesaving in selected instances. Although much has been written on homografts, so far there have been no proved cases of permanent survival of the homograft except in such unusual situations as when the donor is an identical twin. Homograft success in patients whose antigen-antibody response is altered (i.e., agammaglobulinemia) has promoted continual effort to establish a better method of homografting.

Immediate and early excision and grafting of burn wounds has been attempted but has not been substantially justified by a reported series of cases. Inability to accurately judge the depth of tissue destruction in the earliest phase limits the value of this procedure. Efforts at early excision and grafting are being continued in select patients in order to circumvent the hazards of septicemia. Recent evidence has been promising.

The care of an acutely severe burn of the hand deserves special consideration. Brown[6] recommends immediate pressure dressings with the fingers individually wrapped. On the third day the dressing is removed and saline baths are started, obtaining as much active motion of the hand as possible. Shortly thereafter, the entire area is grafted without debridement except for crusts and obvious slough. Where the defect is deep, the graft will take; where it is not needed, i.e., in the area of super-

**Varidase®*, Lederle Laboratories, Pearl River, New York.
†*Tryptar®*, Armour Pharmaceutical Company, Kankakee, Illinois.

6. Brown, J. B., cited by Womack, N. A., On Burns, Charles C Thomas, Springfield, Ill., 1953. Pp. 43-65.

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ficial burn, it will not take. This method of grafting represents a way to correct and preserve the function of the hand and keeps later plastic surgical procedures at a minimum.

Spontaneous healing of deep third-degree burns is to a great extent unsatisfactory. The resultant scar is unsightly and frequently painful and has little resistance to trauma. In the majority of instances, the split-thickness graft is satisfactory. Burn contractures, in general, can be prevented by adequate early grafting.

Treatment of Infection

Among the 86 deaths occurring between 1950 and 1956 at the U.S. Army Surgical Research Unit, Brooke Army Hospital, 50 resulted from invasive infection or septicemia. Isolated organisms in 60 proved cases of septicemia revealed Staphylococcus pyogenes in 65 per cent, Pseudomonas organisms in 35 per cent, and Proteus organisms in 20 per cent. Tetanus, gas gangrene, and wound diphtheria are encountered infrequently. Tetanus, fortunately, can be prevented by toxoid immunization or by antitoxin in the unimmunized person.

Penicillin, streptomycin, or broad-spectrum antibiotics are indicated for control of streptococcic infection, which commonly occurs during the first three to five days. Subsequent bacterial cultures and sensitivity tests indicate which antibiotics are required. Routine antibiotic therapy is unnecessary for minor burns covering 20 per cent or less of the body surface. It must be re-emphasized, however, that adequate wound drainage and debridement are essential when invasive infection becomes apparent. To date, the topical use of antibiotics, as a significant factor, remains to be clarified.

It has been stated that, for anyone with less than a 50 per cent burn, use of ACTH is not warranted, because the stress response of the body is already maximum. The use of adrenal cortical hormones remains a matter of judgment in each patient.

Nutritional Therapy

Marked loss of weight has long been recognized as a serious complication of severe burns. Protein and vitamin deficiencies are among the chief nutritional disturbances. A daily minimum of 5000 calories with 400 Gm. of protein in patients with over 20 per cent of the body surface area unhealed is optimum. It is best to use several days to increase the intake of calories to optimum level because sudden caloric increases frequently precipitate

nausea, vomiting, and abdominal distention. Protein concentrates have proved valuable in maintaining adequate levels without bulk. Preliminary transfusion therapy and restoration of electrolyte balance will eliminate much of the intolerance to feeding. Intravenously and orally given fat preparations can be of real aid in maintaining a sound nutritional status.

Cognizant of the significant depletion of nitrogen stores from the body in instances of severe burns, Kroulik[7] used norethandrolone* to offset this catabolic reaction. Treatment of 33 burn patients, with and without this steroid, indicated that there was promotion of wound healing and improved maintenance of general metabolic status.

Summary

The prognosis in cases of cutaneous burns should be guarded because many older patients still die after not very extensive burns. Shock is usually present in varying degrees. Diagnostic methods here described are essential for preventing shock and for estimating the patient's needs for water and electrolytes. The hourly urine volume furnishes a good index for adequate fluid therapy and should be maintained at 30 to 50 cc. per hour during the first 24 hours. In treating pain it is important to avoid excessive use of analgesics or hypnotics. The burned area can be treated by the closed method, the exposure method, saline baths, or aerosol sprays. Local infections followed by septicemia must be regarded as an imminent danger. For optimum results, the general nutrition and psychologic state of the patient need to be considered.◄

*Nilevar®, G. D. Searle & Company, Chicago, Illinois.

7. Kroulik, W. J., *J. Int. Coll. Surg.*, 32:359-368,1959.

STEROIDS: FAR FROM ROUTINE THERAPY IN RHEUMATOID ARTHRITIS. "... it would now appear that the steroids should be employed infrequently in rheumatoid arthritis, and, when used, long-continued therapy should be avoided and the dosage reduced to the lowest possible level." [New and Nonofficial Drugs 1961, Philadelphia, J. B. Lippincott Co., 1961, p. 598.]

in rheumatoid arthritis

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Diagnosis and Treatment of Carcinoma of the Lung

R. N. DE NIORD, M.D., *Lynchburg, Virginia*

►*A 25 per cent cure rate can be anticipated if the lesion is detected early and treated promptly. Wide excision of the tumor and removal of the mediastinal nodes is usually required. Measures must be taken to prevent spread of tumor cells into the general circulation during any operative procedure.*◄

Carcinoma of the lung can be cured if hilar lymph node or more distant metastases have not occurred. The present low cure rate is directly related to the fact that there is a lag of from four to six months between the time of first abnormal chest x-ray and thoractomy. One reason for the lag is that a person having an abnormal chest x-ray is usually asymptomatic and does not desire major surgery for a condition which is giving him little or no difficulty. The physician is a second factor in delay. He may advise x-rays every four to six weeks in order to determine whether the lesion is clearing or becoming worse. If it is stationary, delay may be prolonged to six or eight months.

Program for Early Diagnosis

The patient with an abnormal chest x-ray, cough, or hemoptysis should be given a bronchoscopic examination. Saline washings should be done for pyogens, acid-fast, and cytologic study. After cultures and cytology studies are completed, the patient may be given a broad spectrum antibiotic for four weeks. If pulmonary infiltration does not regress or completely disappear in this time, an exploratory thoracotomy and biopsy should be done. Any lung lesion persisting over six weeks should be considered carcinoma unless proved otherwise.

Types of Carcinoma and Their Potential

Incidence of carcinoma of the lung is greater in the male by a ratio of eight to one. It takes one of the following forms:

1. Epidermoid, bronchogenic; 60 per cent.

2. Alveolar-cell, bronchiolar; 10 per cent.

3. Adenocarcinoma, eight per cent.

4. Anaplastic, 22 per cent.

The highest incidence of bronchogenic epidermoid carcinoma occurs in men between the ages of 35 and 55. There is a strong statistical relationship between smoking more than one package of cigarettes daily for 15 years or more and development of this type of carcinoma. Epidermoid carcinoma occurs less frequently in women, even though they smoke cigarettes to excess. Women are more apt to have the alveolar-cell or adenocarcinoma. Anaplastic carcinoma (also referred to as undifferentiated or small-cell carcinoma) is a wildly growing, highly malignant lesion, for which there is no known cure.

Not only the type of carcinoma, but the presence or absence of blood vessel invasion is important in predicting survival. If a carcinoma of the lung, proven microscopically, with no involvement of the hilar lymph nodes and without blood vessel invasion can be completely removed surgically, a five-year cure is almost certain if distant metastases have not already occurred.

Cure Rate Related to Operability

The present rate of five-year survival in all patients with carcinoma of the lung is 10 per cent. Those patients with resectable lesions have a cure rate in excess of 25 per cent. If an early diagnosis can be made and proper surgery performed, this may afford an over-all cure rate of 25 per cent.

The following program should be routine:

1. Yearly chest x-ray for all individuals over 35.

2. Chest x-ray twice yearly for those who have smoked more than one package of cigarettes daily for 15 years or longer.

3. Early chest x-ray for anyone with persistent cough, hemoptysis, night sweats, or pleuritic pain.

4. Immediate bronchoscopy for all patients with hemoptysis or an unusual pulmonary infiltration (peripheral coin lesions, if well circumscribed, do not require bronchoscopy). Right-angle scoping to visualize the left and right upper lobe bronchi is required to detect any occult carcinoma in this region. Saline washings of the bronchus should be done for cytologic, pyogenic, and acid-fast studies. Skin tests to detect histoplasmosis, coccidioidomycosis, and blastomycosis should be done.

5. If bronchoscopic examination, skin tests, and culture studies are all negative, a course of broad spectrum antibiotics is given for four to six weeks. If the chest x-ray does not show complete regression at the end of this time, an exploratory thoracotomy is indicated.

6. All coin lesions or specific, circumscribed densities within the lung should be explored unless they have definite laminations and a clear-cut calcified border indicating a benign granuloma. Any such density with a fuzzy or hazy border should be considered a cancer unless proved otherwise. An adenocarcinoma often has a well-circumscribed edge except over one surface, this representing an infiltration into the lung parenchyma.

Surgical Techniques

If a lung carcinoma is found, it is important to observe the following rules:

1. Ligation of the veins prior to arterial ligation, to minimize spread of tumor cells into the general circulation.

2. Extremely gentle handling of the tumor to prevent dislodging tumor cells.

3. A wide resection with removal of all hilar lymph nodes that are palpable. If lymph nodes seem to be involved, the trachea should be skeletonized and a strip of pericardium removed. Radical pneumonectomy, which does not increase morbidity when done by an experienced surgeon,[1] should be done when hilar lymph node involvement is suspected. Following removal of the tumor, 10 to 20 mg. of nitrogen mustard* is given intravenously to destroy viable tumor cells which have dislodged[2-4] and entered the general circulation. These tumor cells, which have been visualized in the venous blood, may "take" in foreign parts of the body if they are not inactivated. Administration of monoxyclorosene (Clorpactin XCB) directly into the chest and allowing it to remain for five minutes is done to prevent viable tumor implantation.

4. The use of x-ray or cobalt therapy to the mediastinal nodes following surgery is urged even if they are not grossly involved at the time of resection. Microscopic extension of tumor into the mediastinal nodes may be present even though this was not detected by the pathologist. Cobalt therapy (5000 to 6000 *r* over a three- to four-week period) to the mediastinum will delay re-

*Mustargen® Hydrochloride, Merck Sharp & Dohme, Philadelphia, Pennsylvania.

1. Watson, W. L., *Cancer*, 9:1167-1172,1956.
2. Cole, W. H., et al., *Am. Surgeon*, 25:504, 1959.
3. Engell, H. C., *Ann. Surg.*, 149:457,1959.
4. Fisher, E. R., & Turnbull, R. B., Jr., *Surg., Gynec. & Obst.*, 100:102,1955.

currence and possibly produce a cure. This therapy is well tolerated except for some anorexia.

5. Contraindications to surgical intervention include bloody pleural effusion with tumor cells (indicating pleural involvement and incurability), phrenic nerve involvement with paralyzed diaphragm, recurrent nerve involvement with hoarseness, and obvious distant (especially cerebral) metastases.

Summary

Carcinoma of the lung can be resected with a 25 per cent cure rate if detected early. The usual lag of four to six months[5] between first x-ray and bronchoscopy often results in the finding of an unresectable or incurable carcinoma. Bronchoscopy and surgery should be performed after four to six weeks if the pulmonary lesion does not clear.

A wide excision of the tumor and removal of the mediastinal nodes is preferred. A simple lobectomy rather than a pneumonectomy may be performed if the tumor is well contained in the lobe and there is no obvious lymph node extension.[6] Ligation of the pulmonary veins prior to arterial ligation is important to obviate the spread of tumor cells into the general circulation. The use of intravenous nitrogen mustard following removal of the tumor prevents distant metastases and the use of Clorpactin XCB prevents local implantation of tumor cells. Cobalt or x-ray therapy to the mediastinal nodes following surgery may improve the survival rate.◄

5. de Niord, R. N., Jr., *West Virginia M.J.*, 56:266-270,1960.

6. Churchill, E. D., et al., *J. Thoracic Surg.*, 20:349-365,1950.

The Problem of Maintaining Adequate Ventilation During Anesthesia

JOHN I. DAVIES, M.D.,* *Kansas City, Kansas*

►*Ventilation must be such that it will provide adequate oxygenation, ensure correct elimination of CO_2, and avoid the deleterious effects of unphysiologic respiratory movements and pressures on the cardiovascular system. Inadequate ventilation produces collapse and shock in surgical patients.*◄

Respiratory depression during anesthesia was regarded for many years as being of minor importance, with treatment consisting simply of lightening anesthesia and maintaining a clear airway. Complications such as collapse or shock in surgical patients were attributed by anesthetists to surgical trauma and to the effects of deep, prolonged anesthesia often demanded by the type of surgery performed. Surgeons attributed these complications to poor anesthetic administration.

More attention is now being focused on proper ventilation for a variety of reasons:

1. There is an increasing awareness of the consequences which result when adequate ventilation is not properly maintained.
2. More operations are being performed on patients suffering from moderate and severe respiratory disorders.
3. Thoracotomy is becoming increasingly common, as are the problems associated with an open pneumothorax.
4. Use of central respiratory depressant agents, including cyclopropane, intravenous barbiturates, and analgesics, is more common.
5. The use of muscle relaxants is becoming widespread.

Problems in Maintaining Ventilation

Ventilation must be such that it will provide adequate oxygenation, ensure correct elimination of CO_2, and avoid the deleterious effects of unphysiologic

*Assistant Professor of Surgery (Anesthesiology), University of Kansas School of Medicine.

respiratory movements and pressures on the cardiovascular system.

OXYGENATION

Clinically hypoxia is rarely a problem, since oxygen-enriched mixtures will compensate for minor degrees of obstruction or decreased tidal volume. A few instances in which it may be encountered include impairment of oxygen uptake by pulmonary disease, obstruction of large areas of the tracheo-bronchial tree by secretions, constriction of the bronchioles, or compression of large areas of the lungs (as by retractors or packs during some thoracotomies). At the other extreme, an excess of oxygen given for even short periods may also be harmful.

ELIMINATION OF CO_2

Proper elimination of carbon dioxide is a far more difficult problem than maintaining proper levels of oxygen because of such complicating factors as those responsible for impaired oxygen uptake; inadequate minute volume caused by centrally acting respiratory depressants, partial or complete paralysis of respiratory muscles, and effects of certain postures; defective or poorly designed apparatus; ineffective soda-lime; the use of semi-open methods of anesthesia; and an increase in dead space.

Physiology of CO_2 and Pulmonary Ventilation

The tension of CO_2 in the arterial blood is the main factor in the control of normal respiration; the level is in equilibrium with the alveolar CO_2 concentration and normally equals a partial pressure of about 40 mm. Hg. The alveolar concentration is constant for a person for long periods of time and is about 5.4 to 5.6 per cent. If this is increased by as little as 0.23 per cent, ventilation is doubled if the respiratory center is active. Similarly, reducing the level of CO_2 will lead to apnea. The pCO_2 is mainly responsible for maintaining the pH of the blood at normal levels. If the normal ratio H_2CO_3/HCO_3 of 1:20 is disturbed, a respiratory alkalosis or acidosis may occur, particularly during anesthesia when the renal function is depressed. These developments would lead to important changes in the electrolyte balance. The Hamburger phenomenon, or "chloride shift," would lead to secondary changes in the intracellular levels of Na, K, Ca, and Mg.

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MUSCLE RELAXANTS

These usually have no effect on the central nervous system when given intravenously. However, it has been suggested that under conditions produced by respiratory acidosis, or intracellular K depletion, the blood-brain barrier may be so altered that muscle relaxants will cross this barrier and produce such central effects as an initial apparent resistance to the relaxant; brief or prolonged unconsciousness; medullary depression of both the respiratory and the cardiovascular system; and/or irreversibility by neostigmine of competitive muscle relaxants which may explain some cases of "neostigmine-resistant" curarization.[1-4]

BARBITURATES

Acidosis, or lowering the blood pH, tends to move barbiturates from the blood stream to inert tissue spaces, presumably extracellular. Raising the pH has the reverse effect,[5] which may explain why hypoventilated patients who have reacted to final skin suturing may a short time later appear deeply anesthetized.

Effects of Various CO_2 Concentrations

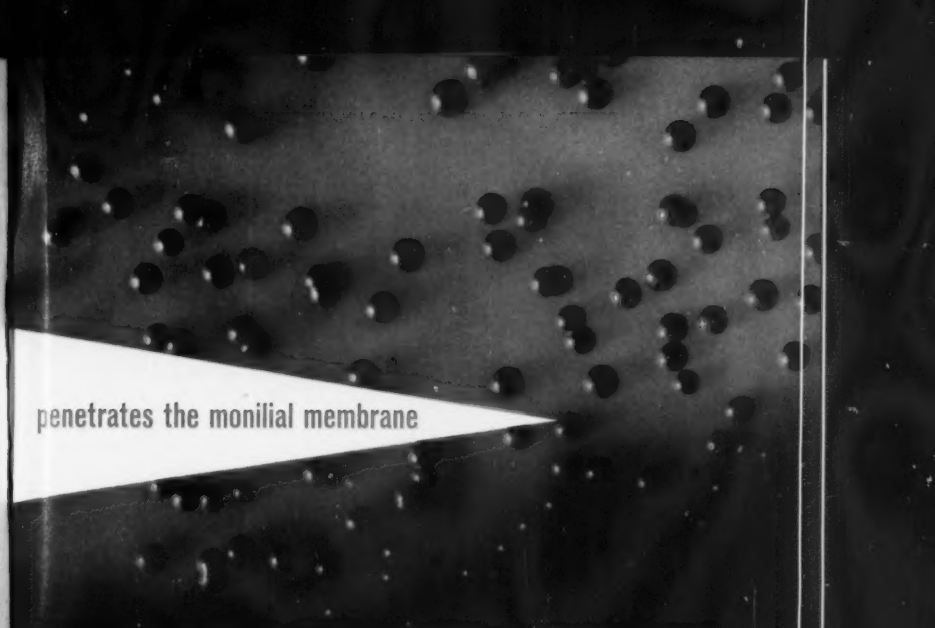
CEREBRATION

If conscious patients breathe concentrations of CO_2 as low as 5 per cent, consciousness may be lost, and 10 per cent is the upper limit of tolerance if consciousness is to be retained. Anesthesia of a sort occurs with 25 to 30 per cent CO_2. At 30 per cent, convulsions may occur and this has been utilized by some psychiatrists as an alternative to electroconvulsive therapy.[6] On the other hand, it has been reported that cerebral efficiency decreases when the alveolar CO_2 is lowered 10 mm. Hg below normal, and that giddiness, disorientation, and tetanic convulsions occur if the level falls below 23 mm. Hg.[7]

CARDIOVASCULAR SYSTEM

Slight increases in CO_2 act as a central stimulant though peripherally a depressant effect (dilation) occurs. Under these conditions blood pressure is raised, pulse rate is increased, skin capillary blood flow is increased, and veins are dilated. With higher concentrations, collapse of the cardiovascular system may occur and death be at-

1. Dripps, R. D., *Ann. Surg.*, 137:145,1953.
2. Hunter, A. R., *Brit. M.J.*, 2:919,1956.
3. Foster, P. A., *Brit. J. Anaesth.*, 28:488, 1956.
4. Ellis, C. H., et al., *J. Pharm. & Exper. Therap.*, 106:353,1952.
5. Dundee, J. W., Thiopentone and Other Thiobarbiturates, E. & S. Livingstone, Ltd., Edinburgh and London, 1956.
6. LaVerne, A. A., & Herman, M., *Am. J. Psychiat.*, 112:107,1953.
7. Barach, A. L., *J. Chron. Dis.*, 3:398,1956.



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tributed to a direct effect on the heart. In experiments on dogs during diffusion ventilation, most of the cardiovascular effects of CO_2 retention are caused by a rapid rise in the titer of circulating adrenalin and noradrenalin.[8] An increase in circulating adrenalin is the main trigger for initiating Selye's stress-response reaction.[9]

When an excess of CO_2 is present, this is reflected in the ECG by depression of the A-V conduction of the heart and complete block at pH 7.0. The S-A node is also depressed and slowing the heart rate may precipitate arrhythmias. On the other hand, a deficiency of CO_2 causes a fall in blood pressure; cardiac diastole becomes less complete, the venous pressure falls, and the A-V conduction rate rises because of increased S-A nodal activity. Some cases of postoperative and "cyclopropane shock" are caused by the rapid postoperative lowering of CO_2 when patients breathe room air.[10]

MISCELLANEOUS EFFECTS

The pCO_2 affects oxygen uptake and utilization by shifting the oxygen dissociation curve (Bohr effect). Tissue hypoxia may result when the blood becomes sufficiently alkaline from hyperventilation.[11] Either excess or lack of CO_2 may interfere with the transport of oxygen and depress intracellular enzymatic activities, particularly those concerned with ATP.[12] These effects may be secondary to changes in pH. It has been shown[13,14] that animals can compensate fairly well to gradual changes in CO_2 concentration, but that sudden changes produce many ill effects. During hypothermia, metabolic acidosis arising from an oxygen debt in tissues (mainly muscle) will complicate the effects produced by poor ventilation. Reduced oxygen consumption affects CO_2 production. The solubility of gases in plasma will alter with changes in body temperature. The lungs can be a source of histamine or heparin. Lipase may be produced in response to pulmonary fat emboli.

Effects of Respiratory Movements

Ventilatory movements and alternative positive and negative intrathoracic pressure affect the cardiovascular system by aiding venous return to the heart. It is thought that these pressures can, of themselves, produce some coronary and pulmonary blood flow,

8. Tenny, S. M., *Anesthesiology*, 17:768,1956.
9. Burn, J. H., *Brit. J. Anaesth.*, 28:459,1956.
10. Buckley, J. J., et al., *Anesthesiology*, 14: 226,1953.
11. Carryer, H. M., *Proc. Staff Meet. Mayo Clin.*, 22:456,1947.
12. Denstedt, O. F., Personal communication.
13. Miller, F. A., et al., *J. Thoracic Surg.*, 20: 714,1950.
14. Seevers, M. H., *New York J. Med.*, 44: 597,1944.

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*Traylor, J B., and Torpin, R.: Am. J. Obst. & Gynec. 61:71-74 (Jan.) 1951.

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even in the absence of an effective heart beat. Similarly increasing the mean intrathoracic pressure will, by impeding venous return, cause a lowering of cardiac output and fall in blood pressure.

Monitoring of Ventilation

It is the concern of every anesthesiologist to ensure that ventilation is adequate. His aids and measurements include estimation of blood pH, pO_2, and pCO_2, oximeters, and spirometers. Most of the latter, of which there is a wide variety available, are costly and not clinically practical.

Monitoring may also be carried out by means of Radford's "normogram," which consists of a series of graphs and tables from which a patient's minute volume can roughly be predicted. Allowance is made for factors such as age, sex, size, and temperature.[15]

Clinical signs, though regarded by some as unreliable, cannot be lightly dismissed. It is a triumph that anesthesiologists appear to be able to maintain adequate and efficient ventilation without the aid of complicated monitoring devices.

Aids to Ventilation

Various aids to respiration and ventilation have been devised. The term "respirator" usually refers to apparatus applied outside the body and "ventilator" to devices attached directly to the airway. The former have been considered more physiologic in simulating normal respiration, though some have advocated intermittent positive pressure breathing as being preferable in patients with a tracheostomy.

The usual method for assisting or controlling respiration is by compressing the rebreathing bag of the anesthetic machine. The "educated hand" is controversial; the main advantage of this method is that important information can be obtained by this method, including presence of respiratory obstruction, compliance of the chest wall and lung with inflation, and the detection of spontaneous respiratory effects.

Disadvantages are that the method is inefficient and tiring, the operator cannot leave the machine (though this has been said to be an advantage[16]), and a negative phase cannot be incorporated. The latter may be advantageous in emphysematous patients, since the pCO_2 cannot then be lowered to dangerous levels.

A number of inexpensive semi-mechanical ventilators are available; those of Etsten and

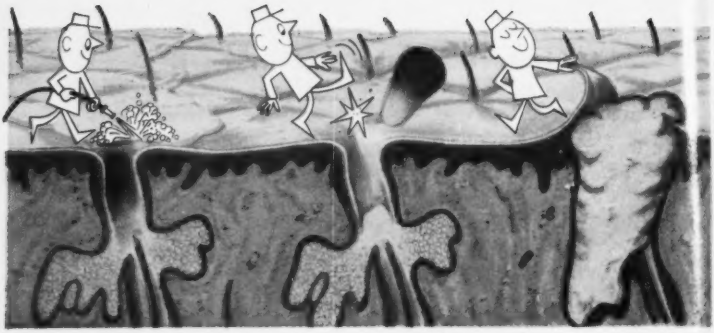
15. Radford, E. P., et al., *New England J. Med.*, 251:877,1954.

16. Dobkin, A. B., & Wyant, G. M., *Brit. J. Anaesth.*, 28:353,1956.

Mackay will very easily give pressures from plus 20 to minus 10 cm. water.

Choice of mechanical respirators varies from authority to authority. The greatest controversy currently involves the two types of controls available: pressure controlled, volume variable; and volume controlled, pressure variable. In clinical application these are of more theoretical than practical importance.

Ventilators may be driven by electricity or by compressed gases. Basic control may be by pressure, by volume, or by time. Some are controlled by a combination of all three. Most respirators work continuously, but some have been devised which are initiated by the patient's respiration and provide assistance to the spontaneous efforts. So many ventilators have been introduced and their design is of such complexity that recently an excellent book, "Automatic Ventilation of the Lungs," by Mushin, Baker, and Thompson has been published which describes 35 ventilators. Any of these may be satisfactory when used properly. The Jefferson ventilator was among the first to be fully investigated. It was found during open pneumothorax that ventilation was adequate and operative conditions good with pressures of plus 15



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mm. and minus 5 mm. Hg, phases 1 to 2. These conditions gave a mean endotracheal pressure of 5 mm. and a mean minute ventilation of 10 liters. When the mean endotracheal pressure was 3, the lungs were partially collapsed, and when the mean pressure was 7, the lungs were overdistended.

Conclusions

Ideal ventilation during anesthesia can be summarized in the words of Claude Bernard, who said, "All the vital mechanisms, varied as they are, have only one object, that of preserving constant the conditions of life in the internal environment."

Soybean Goiter

In 3 infants fed soybean formulas, euthyroidism was present as judged by physical findings and normal growth, while serum protein-bound iodine values were slightly low and serum cholesterol was normal. In 2, there was a marked increase of I^{131} uptake over normal in 24 hours, the third having a marked increase in the I^{131} uptake at 4 hours with a return to a high-normal value at 24 hours. The first two patients had normal I^{131} uptakes after soybean milk was discontinued. The third was kept on the soybean formula while iodine was added to the diet, the I^{131} uptake also returning to normal in this patient. In the first 2 the goiters greatly shrunk when soybean milk was discontinued, as did the goiter in the third when iodine was added to the diet. The thyroid gland changes were similar to the hypertrophy and hyperplasia found in thyroid glands early in iodine deficiency.

Shepard, T. H., et al., *New England J. Med.*, 262:1099-1103,1960.

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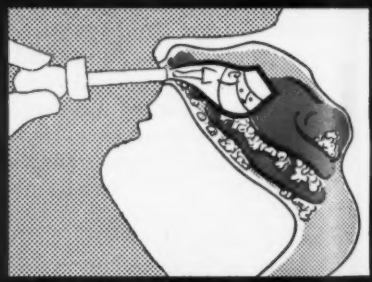

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Metabolic Errors and Mental Retardation

MICHAEL J. CARVER, PH.D. and
CECIL WITTSON, M.D.,* *Omaha, Nebraska*

►*Three inborn errors of metabolism which result in mental retardation are phenylketonuria, galactosemia, and hepatolenticular degeneration (Wilson's disease). With early diagnosis of these syndromes, there is evidence that treatment with the methods now known will prevent retardation in many.*◄

An inborn error of metabolism is a specific inherited metabolic defect which represents a failure of the body to carry out a particular sequence of metabolic reactions. Since the original description, many diseases have been included in this category. These diseases are of interest to many because of their association with mental retardation.

Mental retardation is a complex of biological, psychologic and environmental factors which cuts across all fields of research.[1] It is an area which is undergoing rapid and encouraging development. Current interest in mental retardation and inborn errors is the result of a faint glimmer of hope that there is a possibility of doing something for persons displaying this symptom complex. The many advances presently being made in the field of nucleic acid chemistry and biochemical genetics offer additional hope for the future.

It is no longer justifiable merely to categorize a child as retarded and place him in an institution. Since there are at hand possibilities for help, it is the obligation of those responsible to find out why the child is retarded and what can be done about it. This presents the problems of prognosis and genetic counseling, and gives the physician the opportunity to help the family in adjusting to the situation where prognosis is poor, and also in establishing within the family a clear understanding of the impact of the mentally retarded child on future siblings.

*Nebraska Psychiatric Institute, University of Nebraska College of Medicine.
Supported in part by Grants M 2204 (C2) and OM-162 (C1), National Institutes of Health, Public Health Service.
1. Masland, R. L. et al., Mental Subnormality, Basic Books Inc., New York, 1958.

It is not possible to discuss in detail the many conditions characterized by an inborn error of metabolism associated with mental retardation. Rather, examples have been chosen which in a general way illustrate the problem and for which a possible treatment has been discovered. Three diseases, phenylketonuria, galactosemia, and hepatolenticular degeneration will serve as working models.

Phenylketonuria

This, the most common of the diseases of protein metabolism associated with mental retardation, accounts for only about one per cent of institutionalized defectives. Its incidence in the general population has never been accurately determined. The frequency, however, of the heterozygous carrier is one in 80. Caucasians form the greatest number of tabulated cases, although all races are affected.

Early recognition of the disease depends upon chemical determination of one of the excretory products of phenylalanine metabolism. Since the enzyme necessary for conversion of phenylalanine to tyrosine is absent or deficient in phenylketonuria, the metabolism of phenylalanine is blocked prior to the formation of tyrosine, and abnormal metabolites are formed. In the phenylketonuric infant these metabolites, principally phenylpyruvic acid, appear in the urine at about the fifth or sixth week, at which time, ideally, the physician should make the diagnosis. Recently a paper strip† containing ferric and magnesium salts plus cyclohexylsulfamic acid, has been introduced. According to the manufacturer, the paper strip test will detect phenylpyruvic acid at very low concentrations.

The clinical signs and symptoms frequently found include mental retardation, neuromuscular abnormalities, behavioral deviations and somatic changes.[2] The mental deficiency in untreated cases is almost always severe, the I.Q. being 20 or less. The neurologic complications include increased muscle tone and knee reflexes, absence of or limited speech, short-stepped gait or seizures. Patients also exhibit impaired awareness, fright reaction, untidiness, and digital mannerisms. There is also often seen catatonic-like posturing, apathy, emotional instability, temper tantrums, and schizophrenic-like outbursts.

A treatment based on a diet low in phenylalanine now offers some hope for the phenylketonuric infant. This diet utilizes, as a sole source of protein, a pro-

†*Phenistix*,® Ames Company, Inc., Elkhart, Indiana.

2. Wright, S. W. & Tarjan, G., *J. Dis. Children*, 93:405,1957.

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1. Cigarroa, L. C.: J. Internat. Coll. Surgeons *34*:442, 1960. 2. Morani, A. D.: J. Women's Fed. *42*:12, 1960. 3. Moore, F. T.: Brit. J. Plast. Surg. *11*:335, 1959. 4. Morani, A. D.; Serlin, O.; King, R. M., and Flynn, J. R.: J. Internat. Coll. Surgeons *34*:709, 1960. 5. Teitel, L. H., *et al.*: Indust. Med. *29*:150, 1960. 6. Jenkins, B. H.: Med. Times *87*:1613, 1959.

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tein hydrolyzate from which phenylalanine and some other amino acids have been removed. The hydrolyzate is supplemented with a synthetic amino acid mixture lacking phenylalanine. Encouraging reports have been received from physicians using the diet in treatment. A typical result[3] indicates two newborn infants, treated since the appearance of phenylpyruvic acid in their urine, followed healthy development patterns after 7 months and 21 months respectively. Other encouraging results have also been reported.[4,5]

Variability of response to the diet has also been noted, including failure to improve at all. Most investigators feel the chances for improvement depend largely on initiation of therapy as soon as possible after the diagnosis has been made. Because of the genetic basis of the disease, siblings of known phenylketonuric patients should be tested repeatedly from the fourth week after birth up to the eighth or ninth week.

Galactosemia

This disease is also associated with mental retardation and is characterized by an inability to convert galactose to glucose in the normal manner. It can usually be detected by the presence of galactose in the urine or by abnormally high galactose levels in blood.

Like phenylketonuria, galactosemia is a genetic defect, transmitted as an autosomal recessive. The incidence in the population has not been determined, although it would appear to be rare.*

Galactose is converted to glucose by four distinct metabolic steps. Investigators have established that the enzyme required for the conversion of galactose-l-phosphate to glucose-l-phosphate is absent or deficient.[7] The P-galactose - uridyl - transferase deficiency results in an accumulation of galactose-l-phosphate in erythrocytes and galactose in blood. Subsequently, there occurs an accumulation of galactose in tissues which can give rise to cirrhosis of the liver, cataracts, and renal changes with a generalized aminoaciduria. The blood glucose level is depressed by the galactose and this can give rise to convulsions and possibly the mental retardation observed.

Galactosemic infants appear normal at birth but following a

3. Horner, F A. et al., *J. Dis. Children*, 93: 615,1957.
4. Woolf, L., et al., *Brit. M.J.*, 1:57,1955.
5. Bickel, H., et al., *Acta Paediat.*, 43:64,1954.

*Incidence is a relative matter since screening programs for finding the inborn errors are practically non-existent. For example, of 21 cases of phenylketonuria found in a state home,[6] only one had been diagnosed as such prior to the urine screening program.

6. Garfield, S., & Carver, M. J., *J. Nerv. & Ment. Dis.*, 130:120,1960.
7. Isselbacher, K. J., et al., *Science*, 123:635, 1956.

few days of milk feeding, they display some of the symptoms characteristic of this condition. Vomiting, failure to gain weight, lethargy, enlarged liver, and prolonged jaundice are typical symptoms. If the infant survives, dwarfism, mental retardation and cataracts are prone to appear.

As in phenylketonuria, the treatment consists in removing the offending agent from the diet. Since galactose is an important constituent of lactose, all milk and milk products are stopped. This will usually alleviate the acute symptomatology. A protein hydrolyzate may be substituted for the milk. As the infant develops, small amounts of milk products may be given. It would appear reasonable to assume that this is possible because other pathways of galactose metabolism develop.

Hepatolenticular Degeneration (Wilson's Disease)

This disease is characterized by an increased absorption of copper from the intestine, increased content of copper in liver, brain and other tissues, increased urinary excretion of copper, aminoaciduria, and an elevated blood uric acid. The Kayser-Fleisher rings at the limbus of the cornea are also of diagnostic value.

There is usually a deficiency of ceruloplasmin (copper-containing protein of plasma) which can be related to a single autosomal recessive gene. Most probably, the decrease in total plasma copper is the result of this ceruloplasmin deficiency. This is accompanied by a relative and absolute increase in the normally small amount of non-ceruloplasmin copper of plasma. This copper can freely diffuse across capillary walls into tissues and is responsible for the signs and symptoms of the disease.

On the other hand, the concept of a defective synthesis of ceruloplasmin as a cause of hepatolenticular degeneration leaves much to be desired.[8] Normal levels of ceruloplasmin have been reported in patients with the disease while decreased levels have been observed in the absence of the disease. The deficiency of ceruloplasmin itself probably does not cause the hepatolenticular degeneration but may result in unknown mechanisms which cause an increased absorption of copper from the intestine and in the non-ceruloplasmin copper of plasma.

The clinical signs observed are principally neurologic and include involuntary movements, dysphagia and emaciation. Associated with these are emotionalism and occasionally mental retardation. The untreated disease

8. Bearn, A. G., *Metabolism*, 9:208,1960.

is progressive and fatal. It is characterized, pathologically, by degeneration of the lenticular nucleus and cirrhosis of the liver, both due no doubt to the excessive copper deposition.

Treatment consists in mobilizing the copper. This has usually been accomplished by the use of BAL (British-Anti-Lewisite) which will complex the metal. Cortisone and high protein diets are also of help and favorable results have been reported following administration of penicillamine.

It should be emphasized that this discussion by no means exhausts the possibilities for treatment of the mentally retarded. Rather, the examples should serve as an indication of what can be done and, it is hoped, forecast what will be done in the future.◄

Prostatectomy: Transvesical Technique

With the patient in Trendelenberg position to aid in retraction, transverse suprapubic incision is made and followed by a transverse bladder incision just above the vesical neck. In addition to being simple to perform and requiring no special instruments, this technique has the following advantages:

1. Complete visualization of bladder neck, intraprostatic portion of prostate, trigone, and bladder cavity.
2. Direct control of bleeding by transfixion sutures.
3. Easy removal of tissue remaining at bladder neck after enucleation of prostate.
4. Primary closure with shortened postoperative drainage period.
5. Option for secondary drainage at time of operation if primary closure is contraindicated.
6. Ready accessibility of bladder cavity for intravesical procedures.

Complications of primary closure have been few. Serious secondary hemorrhage has been infrequent and easily controlled. The incidence of suprapubic fistula has been less than 10%, and that of bladder spasm has been no higher than with other procedures in and around the bladder neck.

Harvard, R. M., & White, R. R., *Connecticut Med.*, 24:286-288,1960.

Musculoskeletal Disorders Amenable to Treatment with Intravenous Methocarbamol

DARIUS FLINCHUM, M.D., *Atlanta, Georgia*

►*In 164 patients, musculoskeletal disorders most successfully treated with injectable methocarbamol were acute back pain due to sprains and strains; interscapular muscle fatigue-tension syndrome; and postoperative conditions in which massive muscle spasm was involved, as in large muscle transfers.*◄

The successful employment of parenteral methocarbamol to relieve postoperative muscle spasm following cervical and lumbar laminectomy has been reported.[1] Oral methocarbamol has successfully reduced reflex skeletal muscle spasm through a depression of spinal multisynaptic pathways in a variety of orthopedic conditions.[2]

It is the purpose of this paper to further define the therapeutic scope of intravenous methocarbamol* in a variety of musculoskeletal disorders. Special attention was paid to the drug's action in the management of interscapular fatigue-tension syndrome.

Material and Methods

The drug has been shown to exert a depressant action on the polysynaptic reflexes, without modifying the monosynaptic reflex arc.[3] The drug appears to be non-toxic in recommended doses and may be administered over long periods to patients with chronic muscular disorders.

Injectable methocarbamol is a solution of methocarbamol in 50 per cent aqueous polyethylene glycol-300. Each 10 cc. ampul contains one gram of the active drug. Polyethylene glycol-300 has been approved by the Food and Drug Administration as a

*Robaxin® *Injectable*, A. H. Robins Company, Inc., Richmond, Virginia.

1. Popper, J. L., & Flanagan, M. E., *J.A.M.A.*, 171:298-299,1959.
2. Forsyth, H. F., *J.A.M.A.*, 167:163-168,1958.
3. Truitt, E. B., *J. Pharm. & Exptl. Therap.*, 122:239-246,1958.

food additive and as a vehicle for parenteral medications.

The cases reported in this study include the wide variety of musculoskeletal disorders normally seen in an orthopedic practice. The conditions varied in severity from the excruciating pain and severe spasm of acute sprains to the dull aching pain experienced by patients with chronic myalgia. Each patient was thoroughly examined and a tentative diagnosis was made. In some cases, followup examination or surgical exploration required a change in the tentative diagnosis.

The parenteral dosage form was injected intravenously with the patient recumbent and, in a few cases, was added to five per cent dextrose solution for slow intravenous drip. Since the solution is hypertonic, a prominent vein was chosen to avoid the possibility of phlebitis. At least three to five minutes was allowed for the administration of each 10 cc. Following the injection, each patient rested for 10 to 15 minutes.

Most of the patients in the present study with acute sprains and strains, tension-fatigue syndrome, torticollis, and disc pathology were treated in the office. Complicated cases, those refractory to outpatient treatment, and cases involving postoperative muscle spasm were treated in the hospital.

The results observed were based on objective determinations of skeletal muscle spasm including list, range of motion, functional capabilities before and after treatment, and subjective impressions of the patient's comfort. They were rated on a three-point scale as satisfactory (significant objective and subjective improvement), partially improved (moderate objective or subjective improvement but some residual discomfort remained), or not improved.

Results

The over-all clinical results in 145 cases appear in Table 1. Those conditions which responded most favorably to methocarbamol included acute low back strain or sprain, acute cervical strain or sprain, interscapular fatigue-tension syndrome and post-surgical muscle spasm.

1. Acute low-back strain or sprain. Of the 56 patients in this category, 40 received one gram (10 cc.) methocarbamol intravenously. Twenty-eight patients reported marked relief of pain, five had varying degrees of relief, and seven failed to respond. The other 16 patients in this category were injected from two to four times over periods of up to a month with beneficial relief of symptoms.

TABLE 1

CLINICAL RESULTS OF TREATMENT WITH INJECTABLE METHOCARBAMOL

DIAGNOSIS	CASES	NUMBER OF INJECTIONS	RESULTS	
			SATISFACTORY	FAIR OR POOR
Acute low back strain or sprain	56	1 - 4	49	7
Acute cervical sprain	21	1 - 7	17	4
Interscapular fatigue-tension syndrome	22	1 -10	18	4
Post-surgical spasm	6	-	6	0
Acute torticollis	6	1 - 8	1	5
Chronic back strain	11	1 - 2	4	7
Herniated disc	18	1 - 7	8	10
Multiple trauma	3	1	3	0
Tetanus	1	4	1	0
Epilepsy	1	16	1	0
TOTAL	145		108	37

2. Acute cervical sprains. In 21 acute neck sprains associated with various forms of injury to this region, symptomatic relief was noted in 17 cases. Only one patient required a temporary collar support.

3. Interscapular tension-fatigue syndrome. Eighteen of the 22 patients with this condition reported good symptomatic relief.

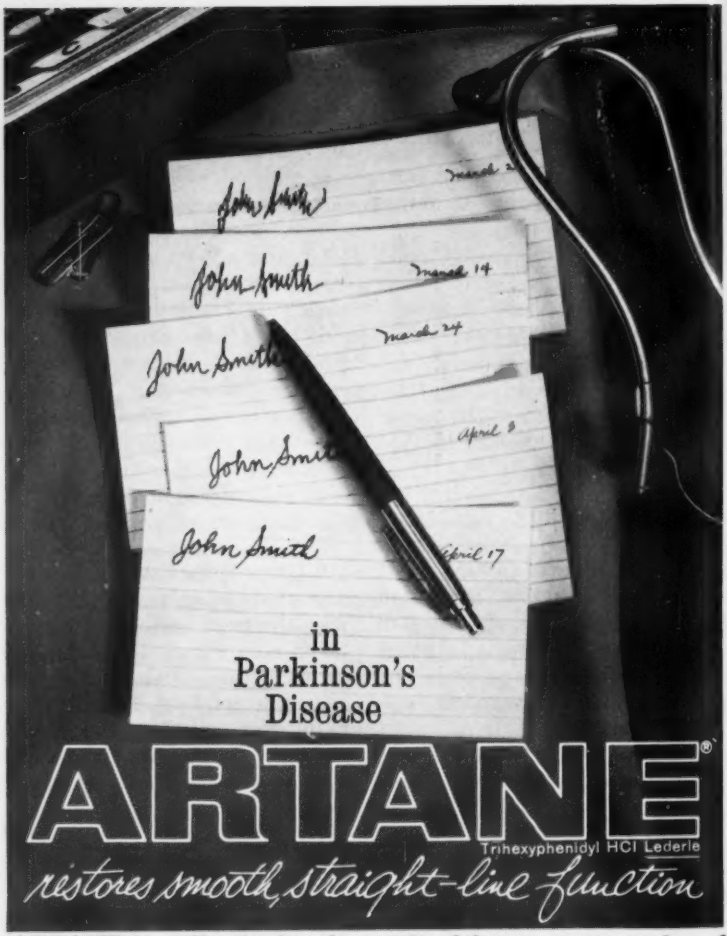
4. Postoperative muscle spasm. Six patients who received methocarbamol injectable in the postoperative period reported significant relief of discomfort following the injection.

5. Acute torticollis. Four patients reported temporary relief of pain and spasm; in two cases, no improvement was noted.

6. Chronic back strain. An appreciable reduction in discomfort was observed in four of 10 patients who were injected on one or two occasions. One patient received a total of 10 injections with good relief of neck and shoulder pain. The injections were supplemented by daily doses of oral methocarbamol.

7. Herniated intervertebral disc. Intravenous methocarbamol was a useful adjunct to specific treatment for this mechanical derangement of the spine. Eight patients reported a marked reduction in symptoms and 10 others admitted to a transient lessening of discomfort.

8. Acute trauma. Three patients were injected to relieve se-



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Request complete information on indications, dosage, precautions and contraindications from your Lederle Representative or write to Medical Advisory Department.

LEDERLE LABORATORIES, A Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

vere discomfort arising out of multiple bruises and contusions, rib fracture, and back and shoulder sprain sustained in auto accidents. All received from two to four injections and all noted good relief of discomfort and ability to move affected parts with ease.

9. Tetanus. In one case of tetanus, methocarbamol appeared to be lifesaving. A man of 58, one month following a puncture wound of the leg, developed a classic clinical picture of tetanus with trismus, marked generalized muscle spasm, and opisthotonos. He was given the customary regimen of tetanus antitoxin, antibiotics, and supportive therapy. A definite improvement in muscle rigidity was noted following each of four intravenous injections of methocarbamol administered over a five-day period.

10. Epilepsy. One woman, a known epileptic, developed a grand mal seizure in the office while waiting for treatment of an old hand injury. One gram methocarbamol was injected intravenously and the convulsion was immediately interrupted. Thereafter, this patient was given an injection weekly for four months. During this time, she felt more relaxed and had only one mild seizure, instead of the three to four seizures weekly she had experienced before medication.

11. Conditions that did not respond. Seven patients with arthritis and other degenerative changes, three patients with bursitis, two patients with tic, and three with cerebral palsy received little or no therapeutic benefit from methocarbamol injectable. No lasting relief was obtained in three cases of spasmodic torticollis, but in one case it did provide relaxation when given prior to the patient's psychiatric treatment.

Side Effects

During the injection some patients noted a taste in their mouth, usually described as metallic, and about half the patients had a feeling of warmth at completion of the injection. Both of these sensations were transient and neither caused the patient undue discomfort or apprehension.

Discussion

Painful or troublesome skeletal muscle spasm appearing as muscle tightness, spasm with abnormal posture, and painful movement are frequent complications of many conditions seen by the orthopedic specialist or general practitioner. Since the entire body is clothed in muscle tissue and is dependent upon proper functioning of each muscle group for balance, main-

tenance of posture, effective movement and performance of work, recreation and home functions, the occurrence of skeletal muscle spasm is troublesome to the patient and offers the physician an opportunity to furnish immediate relief.

Reduction or resolution of pain and discomfort is the function most frequently expected of a physician. The immediate high blood level of methocarbamol that follows an intravenous injection furnishes prompt relief of symptoms and allows the patient to definitely recognize that the physician is responsible for his improvement.

In the present study, the most gratifying response was noted in the 56 patients with acute back pain, which usually resulted from a strain or slight muscle tear in a large paravertebral muscle group. Within minutes after the injection of one gram (10 cc.) of methocarbamol, the patients were again comfortable and some were continued on oral methocarbamol for a few days. Good results were also obtained in patients with acute cervical sprains. In the latter category, however, other means of adjunctive treatment such as local heat, traction, or temporary collar supports were employed in most cases.

A syndrome best described as interscapular fatigue-tension was unusually amenable to treatment with methocarbamol injectable. This condition includes a number of symptoms such as muscle soreness throughout the upper back region between the scapulae and along the rhomboid and trapezius muscles. This is usually associated with anxiety or tension. Most of these patients were middle-aged housewives; a few were young secretaries and businessmen.

The relaxation of tense skeletal muscle groups with methocarbamol helped improve posture and reduce fatigue. Since many of the patients returned from time to time for repeated injections, a marked symptomatic improvement must have been evident to the patients.

Painful spasm of skeletal muscles in the immediate postoperative period following orthopedic surgery occurs often enough in a large enough number of patients to require specific attention and a convenient, dependable method of resolution. In one series,[1] half the patients undergoing laminectomy for herniated intervertebral disc or spinal cord tumor developed palpable muscle spasm within 24 to 36 hours after surgery.

In the present study, the most dramatic relief of discomfort was observed in two patients who had

undergone a transfer of the biceps femoris muscle for quadriceps paralysis. Four additional patients who had undergone spinal fusion experienced a significant reduction in skeletal muscle spasm and pain following an injection of one gram of injectable methocarbamol.

A variable response was observed in patients with chronic back strain and herniated intervertebral disc. Since these conditions are complex and often involve mechanical changes in muscles and joints, they are much more difficult to manage and less amenable to treatment. The divergence in effect in these patients may have been due to the use of one gram in all cases. Dosages of up to three grams are recommended by the manufacturer and have, in fact, been administered with outstanding success by another investigator.[4] On the one gram dosage, almost half the patients reported a marked reduction in symptoms and others admitted to a temporary relief of discomfort.

Some patients with disc pathology have experienced an increase in pain following injections of methocarbamol.[5] This may have been due to a reduction of the splinting effect of the spastic muscles with a corresponding increase in disc herniation and added pressure on the nerve. This was not observed in the present series.

Since confidence enhances any mode of treatment, a few words of encouragement during the time the injection is being given helps to support the patient psychologically. If the patient is asked to move his back half-way through the administration, he will usually notice beginning signs of improvement. This demonstration of efficacy usually allays any apprehension he may have had about receiving the drug.

In animal studies, an adequate plasma level has been obtained with oral and intravenous administration. In clinical practice, however, the response to the intravenous form is in most instances almost immediate and more dramatic than that obtained with oral methocarbamol. The oral is probably most useful for maintaining the relief of symptoms furnished by the administration of the parenteral dosage form.

Summary and Conclusions

Injectable methocarbamol was evaluated in 164 cases involving sprains, strains, interscapular fatigue-tension syndrome, postsurgical spasm, and other conditions in which painful muscle

4. Leventen, E. O., & Frank, P. V., *Curr. Therap. Res.*, 2:497,1960.
5. Schaubel, H. J., *Orthopedics*, 1:274-275, 1959.

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spasm or spasticity were prominent.

Musculoskeletal disorders most successfully treated with injectable methocarbamol were acute back pain due to sprains and strains; interscapular muscle fatigue-tension syndrome; and postoperative conditions in which massive muscle spasm was involved, as in large muscle transfers or spine operations.

A syndrome described as interscapular fatigue-tension was successfully treated in 80 per cent of cases.

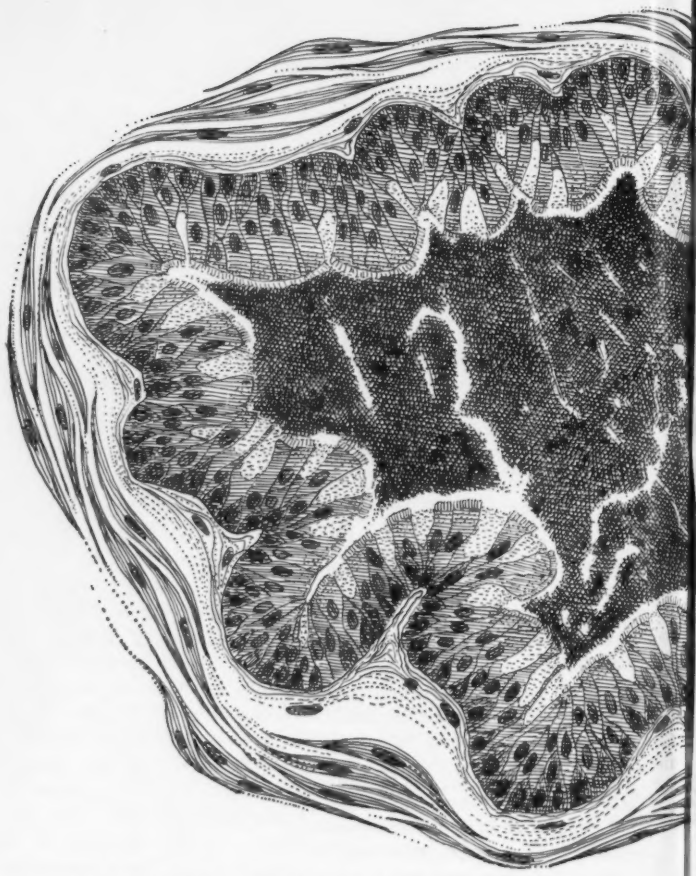
Side effects were minimal and included a transient feeling of warmth and a slight metallic taste.◀

Ménière's Disease

Patients experience sensoryneural hearing loss, tinnitus of varying intensity in the diseased ear, and attacks of true vertigo lasting from several minutes to several hours. The disease usually appears in middle age and more frequently affects men than women. Typically patients show an athletic body build and a perfectionist or successful-executive type of personality. The disease often begins or is exacerbated by several emotional strains.

Medical treatment is directed toward reduction of the increased intralabyrinthine pressure and prevention of its recurrence. If the attacks become very severe and disabling and are not controlled by medical treatment, surgery must be considered. Selective destruction of the diseased labyrinth was achieved by radiation with ultrasonic waves in 60 patients, with the vertiginous attacks being eliminated in about 80% of these. The mastoid was opened under local anesthesia as in a simple mastoidectomy and the bony lateral semicircular canal exposed. Ultrasound was then applied to the latter with a specially constricted applicator for 30 to 60 minutes until the direction of the nystagmic movements of the eyes indicated that the vestibular function of the radiated ear was destroyed. The main difficulty encountered with this treatment was the delivery of an amount of ultrasound sufficient for complete and permanent destruction of the vestibular end-organs. In some cases a partial recovery of function was noted several weeks or months after the treatment, and ultrasound had to be applied a second time.

Altmann, F., *J.A.M.A.*, 176:215-218,1961.



because patients are more than asthmatic lungs...
controlling inflammatory symptoms is frequently not enough

Even cortisone, with its severe hormonal reactions, can effectively contro inflammatory symptoms in bronchial asthma. But a patient is more than th sum of his parts — and the lung is only part of a whole patient. Symptomati control is but one aspect of modern corticotherapy, because what is good fo the symptom may also be bad for the patient.

Principles of Treatment of the Injured Hand

DONALD P. SMILEY, M.D., *St. Paul, Minnesota*

►*Injuries of the hand constitute about one-third of industrial accidents as well as a considerable number of home accidents resulting from use of motor-driven tools and utensils. The way in which the injured hand is treated during the first four to six hours often determines the final result.*◄

If primary treatment of the injured hand is carried out in accordance with sound surgical principles, the patient often has a good chance of attaining a satisfactory recovery; when the primary treatment is not adequate, a series of pathologic mechanisms may be started which can only lead to a poorly functioning, crippled hand. This is the responsibility of the doctor who first sees the patient.

Fundamental Principles

Several fundamental principles must be followed in the treatment of the injured hand:[1]

1. Protection of the open wound and injured tissues from further injury and from secondary contamination.

2. Accurate determination of the history of the wound including the time, type of instrument causing the wound, and nature and extent of the first treatment.

3. Accurate determination of the extent of the injury.

4. Transformation of the open wound into a surgically clean wound.

5. Excision of devitalized tissues methodically by sharp dissection. Use of good judgment, conservation of skin.

6. Closure of all exposed vulnerable structures — tendons, nerves, joints, and bones — and proper closure of the wound as a whole.

Preliminary Treatment

When the injured hand is first

1. Mason, M. L., Rehabilitation of the Hand in Instructional Course Lectures, The American Academy of Orthopaedic Surgeons, 1949, 6: p.p. 95-106, J. W. Edwards, Ann Arbor, 1951.

seen, a careful but rapid determination of the extent of the injury is made and the state of cleanliness and location of the wound is noted. A sterile dressing should be applied and examination of the exposed part of the hand made to determine the function of the nerves, tendons, and joints. In an infant, the diagnosis of a lacerated flexor tendon is usually difficult since the child cannot cooperate in the examination. When the infant's hand is held in the relaxed position, the finger with the lacerated tendon will be extended while the others are flexed; this may be noted when the child is asleep or anesthetized.

The wound should never be probed in the emergency room to see if tendons or nerves are lacerated — this can be determined easily, quickly, and more accurately (in most cases) by physical examination after the wound is covered with a sterile dressing. After this is done, the patient may be sent to x-ray or operating room. A clinical diagnosis should be made before the patient is transferred to the operating room as important injuries which cannot be detected after the patient is anesthetized may be missed. Antibiotics and tetanus toxoid (or antitoxin), if indicated, may be given before the patient is taken to surgery.

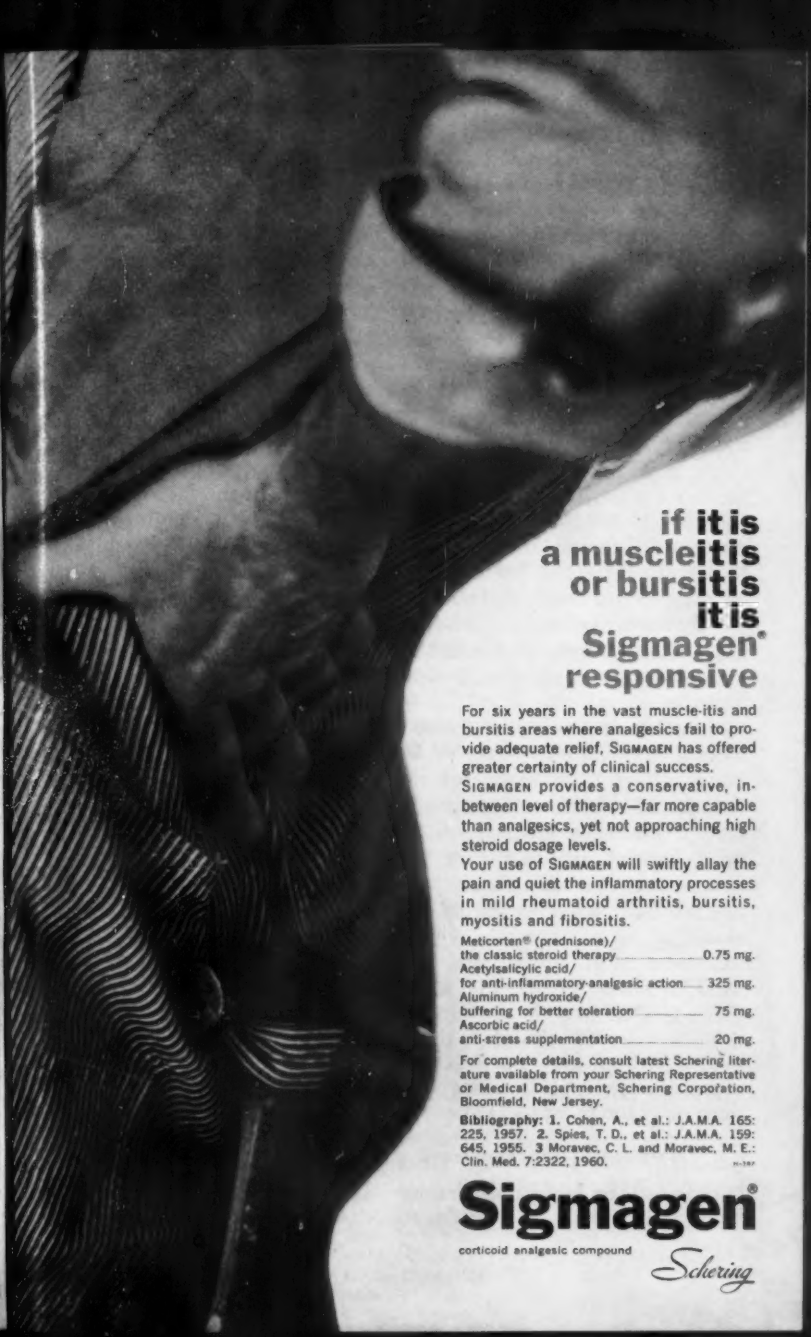
Treatment in the Operating Room

Here the initial preparation is done with the use of either regional block or general anesthesia. The hand and forearm should be shaved and the area thoroughly prepared for at least 10 minutes while the wound is covered. Alcoholic antiseptic agents should be kept out of the wound itself at all times, and copious irrigation with saline should be carried out throughout the preparation. Any contamination with grease should be removed with ether.

The hand and arm are then draped on a stable platform. Good hand surgery cannot be done on a wobbling arm board or unsteady table. The tourniquet, which is an absolute necessity, is inflated.

The wounds are inspected and debrided by sharp dissection. One must be careful of unnecessarily sacrificing skin. Skin coverage takes precedence over all other problems at this time, as the deeper structures cannot heal properly without it and infection may ruin the chance of any future repair.

If necessary, the lacerations are extended for adequate exposure, incisions following the lines of Langer. It is not necessary to memorize these lines in order to make the incisions properly; as a rule, one can fol-



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low the skin lines noted on examination and beware of crossing flexion creases. An incision may be made parallel to a flexion crease, in it, or crossing it at an oblique angle (it is better not to cross it at all if this can be avoided). Incisions to expose the deeper structures in a finger are best made in the midlateral line, dorsal to the flexion creases at the interphalangeal joints. If there is a laceration crossing a flexion crease, in a finger or in the palm, in a perpendicular manner, it should be converted to a transverse line by Z-plasty or some other method, in order to prevent contracture of the skin. This principle should be observed in the placing of skin grafts.

In general, a cleanly incised wound may be closed up to 24 hours after it has occurred. If the wound is badly contused and dirty, the decision to close it must depend upon whether the wound can be adequately debrided. The wounds should be closed if at all possible. Split-thickness skin grafts may be used to close the defects when there is skin loss or the lacerations cannot be closed without too much tension. Even if the grafts do not take, they form a good physiologic dressing.

Treatment of the Tendons

If there are lacerated tendons in the hand, decision concerning their repair must be made at this time. The state of cleanliness of the wound, the condition of the skin over the tendons, the presence of other injuries, and the length of time since the original injury must be considered. In general, a clean, noncontused wound less than four hours old should be required for primary repair of tendons. A lacerated tendon should not be repaired primarily in the face of damaged overlying skin, badly contused surrounding soft tissues, or fracture of the underlying bone. The risk of infection is too great to perform a primary repair in a wound over four hours old. There is no point in repairing a tendon in a hand that cannot be mobilized in three weeks.

If there is any doubt concerning the healing of the wound, a delayed repair should be done. The difference in final result between primary and delayed repair is not sufficient to warrant taking any chance with poor, or delayed, wound healing in order to perform a primary repair.

A delayed tendon repair may be performed two to three weeks after the original injury when the wound is well healed and the scar is fairly mature. At this time, the two most important factors are good skin coverage

and sensation. The scar tissue should be excised and the nerves repaired in addition to the tendons. If one waits too long for tendon repair, there may be permanent shortening of the muscle, necessitating a tendon graft; usually a repair performed more than six weeks after the injury requires a graft.

Exposure of the tendon sheath in a finger is best made through a long midlateral incision, dorsal to the flexion creases of the finger. This may seem to be a more difficult incision to use, but it places the incision in the skin away from the site of tendon suture much more effectively than transverse incisions in the flexion creases.

Lacerations of the flexor tendons in no-man's land (distal palmar flexion crease to the middle flexor crease in the finger) are best repaired secondarily; only the profundus tendon should be repaired or grafted. A simple end-to-end suture of the extensor tendons on the dorsum of the hand or wrist will frequently suffice. Lacerations about the extensor hood of the finger, over the dorsum of the proximal phalanx, are much more difficult to repair.

Following flexor tendon repair, the wrist and joints of the involved finger are placed in moderate flexion. Forced flexion of the wrist or finger joints can result in limitation of motion. After repair of extensor tendons, the wrist is held in moderate dorsiflexion and the fingers in slight flexion; the fingers and wrist are not held in full or forced extension as this position may be extremely deleterious to function, particularly of the interphalangeal joints.

Treatment of the Nerves

The nerves are not debrided as a rule except to cut the ends cleanly before suturing them. The digital nerves should be located and sutured, even out to the distal flexion crease of the finger; anesthesia about the tip of a finger can be responsible for considerable loss of function of the finger and also increases the chance of injuring the finger because of its loss of proprioception and pain sensation. If the nerve cannot be sutured with tension, it should be tagged and left for later repair with a graft.

Treatment of the Bones

Open fractures of the fingers and hand are treated as open fractures elsewhere. The area is debrided and irrigated. Pieces of bone with soft tissue attachments are saved; one should be conservative in removing bone but must not leave contaminated bone behind. The wound should be closed, if possible, and the

part splinted in the functional position. Whether the fracture is splinted or treated in traction, or by medullary fixation with Kirschner wires, depends upon its stability. Closed fractures of the fingers are splinted with the fingers in the flexed, functional position if the fractures are transverse (stable); oblique fractures may need traction or medullary fixation with Kirschner wires.

Forcing the fingers over a bandage roll and wrapping them there may be dangerous in that the circulation of the finger may be impaired and too much strain may be placed on the joints causing a periarticular fibrosis and limitation of motion. A simple metal or plaster splint works well and the finger may be observed more closely. It is well to remember, when splinting fingers, that in the functional position, the fingers all point toward the tuberosity of the carpal navicular.

Stable or transverse fractures of the metacarpals may be treated by a short arm cast, with the hand in a functional position, extending at least to the proximal interphalangeal joint of the involved finger (joint above and joint below immobilized). Unstable fractures of the metacarpals may be treated by traction through the finger or by medullary fixation. If traction is used, it should be removed as soon as the fracture is "sticky" and replaced by a simple splint; traction should not be applied with the finger joints in extension. Fractures through the base of the metacarpal are usually very stable and a simple, short arm cast well molded in the palm and extended out over the metacarpo-phalangeal joint of the involved finger is necessary; there is very little motion at the carpo-metacarpal joint and these fractures, properly immobilized, seldom become displaced. One exception to this is a Bennett's fracture of the base of the thumb metacarpal; this fracture is extremely unstable and requires traction or Kirschner wire fixation.

Fractures of the neck of the metacarpal are immobilized with the metacarpo-phalangeal joint flexed to 90°, and upward pressure on the proximal phalanx to reduce the volar displacement of the distal fragment. One must be careful to pad the proximal interphalangeal joint well to avoid pressure necrosis; a medullary wire may be used if one cannot maintain reduction with plaster or if there is some contraindication to using plaster, such as a burn or other severe skin damage.

Fractures of the phalanges

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usually require no more than three weeks immobilization, even though little callus formation is seen on x-ray; if one waits for callus formation to show on x-ray before mobilizing the finger, the joints will be very stiff. Metacarpal fractures need three to four weeks immobilization in plaster; then guarded motion may be started, and full use in 10 days to two weeks.

Dislocations of the phalangeal joints are usually reduced with longitudinal traction and gentle flexion of the joint. Occasionally one may be found which is irreducible by closed means; this occurs because the head of the proximal bone penetrates the joint capsule and becomes caught. No amount of pulling will reduce this dislocation and forceful manipulation should not be tried because of possible damage to the joint. The joint capsule must be incised and the head of the phalanx extricated. This type of problem is more frequently encountered in the metacarpo-phalangeal joint of the thumb and the interphalangeal joint of the index finger.

Amputations of Fingers

The thumb being the most useful single digit, preservation of its length is extremely important. The index finger is next in importance since it most frequently apposes the thumb.

It is not within the scope of this paper to discuss amputations in detail; only a few basic principles will be considered. The objective is to preserve as much useful length as possible. Loss of a part of a finger or an entire finger lessens the strength of the finger and hand. The finger should be amputated as far distally as possible and still obtain good skin coverage. The patient's age and occupation should be considered when amputation becomes necessary. The palmar flap should be tongue-shaped rather than semicircular, to avoid "dog-ears" at the margins of the suture line. In many cases one will not be able to form typical skin flaps and improvisations will have to be made. Volar skin should be saved for the areas which will undergo the most trauma.

The nerves should be exposed back to normal tissue and severed cleanly without ligatures or injections. The bone is cut at a level which will allow closing the skin without tension. The tendons are cut and allowed to retract; tendons should not be sutured over the end of the bone as this frequently leads to contracture.◀

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Use of Muscle-Relaxing Tranquilizer in Ambulatory Patients

LEONARD J. LEVICK, M.D.,* and
MILTON M. PERLOFF, M.D.,* *Philadelphia, Pennsylvania*

►*Anxiety and muscle tension states were relieved in 136 of 150 patients treated with 400 to 600 mg. of emylcamate daily for from a few days to six months. Suboccipital headache with cervical muscle spasm responded in 80 per cent of patients treated. Four experienced side reactions and discontinued therapy.*◄

The physical symptoms through which anxiety may be expressed provide a more reliable clue for recognizing this disturbance than do emotional symptoms. Most patients discuss their physical symptoms more freely; emotional symptoms, they feel, indicate weakness and even mental illness. They would prefer to be disassociated with any such stigmata. The common physical symptoms of anxiety[1] are as follows:

Musculoskeletal: Tension, tremor, fatigue, sensations of constriction, tightness and pressure sensations, clumsiness, visual blurring, numbness of the extremities, ringing in the ears, headaches, suboccipital tightness, and pain.

Cardiovascular: Precordial pressure and pain, sensations of burning in the chest, palpitations, throbbing, high blood pressure, constriction in the chest.

Gastrointestinal: Nausea, vomiting, flatulence, diarrhea, cramps, burning in the stomach.

Respiratory: Overbreathing, difficulty in breathing.

Genitourinary: Urinary frequency, impotence, lack of sexual interest, fatigue.

Insomnia, obesity of the compulsive eating type, globus hystericus, and some dermatologic lesions may be added to this list.

The differentiation of anxiety and depression is important, since tranquilizing a depressed patient may deepen the depression and serious consequences result. The symptoms which of-

*Assistant in Medicine, Albert Einstein Medical Center, Northern Division.

1. Cameron, D. E., *Am. J. Psychiat.*, 101:36-41,1944.

ten overlap[2] include fatigue, weakness, agitation, muscular aches, paresthesias, insomnia, loss of sexual drive, loss of interest, diarrhea and other gastrointestinal complaints.

When expenditure of time and money for psychiatric therapy appears prohibitive it becomes mandatory for the family physician to help patients with anxiety symptoms. Physicians over the centuries, even though their therapeutic armamentarium was practically valueless, gave reassurance, comfort, compassion, and understanding which helped patients to adjust to their problems and overcome their anxieties. This was the art of medicine. This paper reports results following use of a chemotherapeutic agent recommended for relief of symptoms of anxiety.

Clinical Study

On the basis of favorable reports[3-11] on the effectiveness and safety of emylcamate,* clinical evaluation of the drug was undertaken in 150 ambulatory office patients. Of this group, 106 were treated for symptoms of anxiety and 40 for various types of muscle spasm. The usual dose was 200 mg. three times daily, duration of therapy being from a few days to six months.

Results in patients with anxiety were excellent in 25, good in 48, fair in 23, and poor in 10. In those with muscle spasm, results were excellent in 14, good in 16, fair in six, and poor in four. Suboccipital headache with cervical muscle spasm responded to therapy in over 80 per cent of patients treated. Cervical or lumbar muscle strain, sacro-iliac strain, and muscle pain following the so-called whip-lash injury, e.g., from automobile accidents, responded well to this drug.

Side Effects

One patient developed vertigo, one nausea, one dermatitis and pruritus, and one tinnitus; when therapy was discontinued, symptoms abated within 72 hours in all cases. Fatigue and drug-induced drowsiness, seen with other muscle-relaxing tranquilizing agents, were absent in this series of patients. Blood pressure determinations in all patients during therapy revealed no change in normotensive patients and some

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*Striatran™, Merck Sharp & Dohme, West Point, Pennsylvania.

decrease (10 to 20 mm. Hg) in some of the hypertensive patients. This decrease was undoubtedly related to lessening of anxiety.

Laboratory Studies

Serum alkaline phosphatase determinations were performed in 24 patients before and after therapy. Leukocyte counts including differentials were performed in 75 prior to and following emylcamate therapy. In 20 per cent of patients alkaline phosphatase levels went above normal, returning to normal when medication was discontinued. All leukocyte counts and differential cell counts were within normal limits both before and after treatment.

Discussion

The best response to emylcamate therapy occurred in those patients who complained of flutterings in the stomach, palpitations, headaches, and mild agitation. When the patient becomes more relaxed and calm, the physician must explain how situational and environmental stimuli precipitate these symptoms. If a basic understanding of the problem is not given to such patients, physicians will be helping to propagate a generation of pill-takers. It has become stylish these days to look at one's watch in order to be certain that the next tranquilizer is taken on time. These drugs do what they are expected to do, but it must be certain that side reactions or non-reversible situations are not being induced. With a dosage of 400 to 600 mg. of emylcamate daily, the patient can be relatively symptom-free without side reactions. In cost, the drug compares favorably with other calmative agents.

Conclusions

Emylcamate (Striatran) effectively relieved emotional and neuromuscular tension states in 136 of 150 patients. It was not effective in depressed states, obesity problems, migraine, or emotional states requiring deep psychotherapeutic investigation. The drug had no effect on blood pressure in normotensive individuals but some decrease was observed in hypertensive patients. No significant changes in leukocyte counts or in differential cell counts occurred during therapy. Elevations of alkaline phosphatase levels which occurred during treatment returned to original levels when therapy was discontinued. Less than three per cent of the 150 patients developed side reactions, these disappearing promptly after withdrawal of the drug.◄

clinical report

The Treatment of Abortion

H. E. ATHERTON, M.D.,* *Memphis, Tennessee*

►*Threatened abortion during the first 12 weeks may be treated by rest and administration of progestational drugs. In late abortion, the uterus is best emptied by miniature labor. Early missed abortion is treated by dilation and curettement, late abortion by waiting for the uterus to empty spontaneously.*◄

Between five and 20 per cent of all pregnancies result in abortion. Forty per cent are caused by defective ovum development, the remainder being associated with criminal interference, surgery, local and systemic infection, hormonal deficiency of the endometrium or chorion, and abnormalities of the generative organs. In some instances the etiology is difficult to determine.

For purposes of treatment abortion is divided into early abortion, the first 12 weeks; and late abortion, the twelfth to twentieth week of gestation. The patient is threatening to abort when rhythmic painful contractions of the uterus occur and/or there is passage of dark or bright blood. Vaginal examination will reveal the cervix closed and uneffaced.

Treatment of Early Abortion

The patient should have bed rest, mild sedation, and analgesics. Empirically, progrestational and antihemorrhagic drugs are administered. A tablet† containing one or both of these classes of drugs may be given once every four hours. Should the patient continue to cramp and bleed for more than five days, pass clots, pass part of the products of conception, or the cervix become dilated and effaced, then the abortion is inevitable and the uterus should be emptied.

A patient with early incomplete abortion should be hospitalized and her uterus emptied with a sharp curette. A uterus under three months size lends itself well to dilation and curettement. After this procedure the fundal cavity should be explored

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†*Nugestoral®*, Organon Inc., Orange, New Jersey.

with a sponge forceps and any pieces of tissue lying free should be removed. Rarely will postoperative packing be necessary to control hemorrhage. A dilation and curettement should be performed although the abortus may appear to be complete. Infection is no contraindication, and in severe infection the uterus should be emptied without delay. Transfusion and antibiotics are administered as indicated. No longer do we rely on oxytocics to empty the uterus in early abortion. Patients leave the hospital on the third postoperative day, unless complications such as parametritis and peritonitis have developed.

Treatment of Late Abortion

In late abortion the uterus is best emptied by miniature labor in which the fetus is passed followed by the placenta. Many times this will proceed spontaneously and all that is necessary will be sufficient analgesic to keep the patient comfortable. If there is rupture of the bag of water, prolapsed cord or fetal part, excess hemorrhage, or prolonged delay in expelling the uterine contents, intravenous oxytocinon* drip (1 cc. in one liter of 5% glucose) should be given at sufficient rate as to empty the uterus. In some cases it is necessary to administer oxytocinon drip for eight hours, alternating with eight hour rest periods, for 48 hours. Often this will cause enough cervical dilation for the operator to remove the conceptus with sponge forceps, if complete evacuation does not occur. In a small percentage of late abortions these measures fail because of refractory uterine action and ineffectual cervical dilation. Also severe hemorrhage may call for a more definitive treatment. One must then resort to hysterotomy, placing the incision as low as possible on the uterus, completely removing as much decidua as possible, and dilating the cervix from above for drainage while the uterus is open.

Treatment of Missed Abortion

Missed abortion occurs when a known pregnant uterus fails to enlarge because of fetal death. The diagnosis is made by repeated examination at intervals of three weeks. Only when diagnosis is positive should the patient be informed, because undue anxiety will be excited. If the missed abortion occurs under three months, the uterus may be emptied by dilation and curettement. Late abortion is treated by expectancy and assuring the patient that the dead fetus *in utero* does no harm. Infrequently, missed abortion

*Syntocinon®, Sandoz Pharmaceuticals, Hanover, New Jersey.

can cause afibrinogenemia, so in prolonged cases the blood clotting mechanism should be checked. One might wait 16 weeks or more for the uterus to spontaneously empty, giving the placenta time to undergo necrosis, before resorting to other measures for treating late abortion.

Patients who abort two or more pregnancies after the fourth month should be studied to ascertain if the internal os is competent. Should a third pregnancy have occurred closure of the cervix should be contemplated.

The patient who aborts three consecutive times is a habitual aborter. She should have an extensive preconception study including hormonal assays.◀

Retinal Detachment: Scleral Buckling Procedure

The scleral buckle, a modified lamellar scleral resection, is indicated as a primary procedure for persistent vitreous traction, retinal shrinkage or fixed retinal folds, massive vitreous retraction, and total retinal detachment. It is designed to push the diathermized choroid into contact with the retina. The ridge produced is higher and more permanent than with any other procedure and the breaks are permanently sealed off. The choroid being approximated more closely to the retina, more slack is created on the contracting vitreous bands and the incidence of recurrence is reduced. Since diathermy is applied only in the bed of the resection, tissue necrosis and postoperative adhesions are minimized, facilitating reoperation if needed and reducing the hazard of scleral perforation. Most patients are ambulatory in 3 days and able to go home in about a week, total disabiliity being about 6 weeks.

Although there is some risk that the buried polyethylene tube (used for draining sub-retinal fluid) will erode through the sclera into the vitreous, results are gratifying if attention and care are given to the following details of the operation:

1. Control of the operative procedure by frequent examination of the fundus with binocular indirect ophthalmoscopy.

2. Accurate localization of the breaks.

3. Correct positioning of the lamellar resection.

4. Adequate drainage of all "available" subretinal fluid.

Friedman, M. W., *Eye, Ear, Nose & Throat Month.*, 39:247-250,1960.

Antiemetic Effect of Trimethobenzamide In Pregnant Patients

S. BRESLOW, M.D., H. A. BELAFSKY, M.D., J. E. SHANGOLD, M.D., L. M. HIRSCH, M.D., and M. B. STAHL, M.D.,* *Perth Amboy, New Jersey*

►*This drug was effective in relieving nausea and vomiting of pregnancy in 95.6 per cent of 161 patients treated. Intramuscular doses of 200 mg. were given initially to 122 of the patients, maintenance dosage being 100 mg. daily by mouth. It was effective in 33 of 36 patients who had not been helped by other antiemetics.*◄

Though seldom serious, the nausea and vomiting which occur in one-half to two-thirds of pregnancies[1] are distressing symptoms. Studies of the vomiting reflex indicate that these symptoms are the result of stimulation of the chemoreceptor trigger zone (CTZ).[2] Antihistamines and phenothiazines, drugs commonly used for relief, probably act by suppressing this vomiting center.

Administration of antihistamines results in a high incidence of drowsiness, a characteristic anticholinergic effect.[1,3] Several of the phenothiazines produce side effects and in some instances, serious adverse reactions.[4-6]

Trimethobenzamide† has been shown to have specific antiemetic and antinauseant properties but no other physiologic activities.[7] Side effects have not been reported.[8-12] Because of these attributes we decided to study its effects in pregnant patients with nausea and vomiting.

*Obstetrical and Gynecological Group of Perth Amboy.

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†*Tigan™*, Hoffmann-LaRoche Inc., Nutley, New Jersey.

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Material and Methods

Trimethobenzamide was administered to 161 pregnant patients with nausea and vomiting, detailed case records being kept on 85 (Group I). In the remaining 76 (Group II) notations were made as to whether or not the medication was effective.

Capsules were given to all patients in packages of 12, one (100 mg.) to be taken at bedtime, another upon arising. The most severe cases required, in addition to oral therapy, intramuscular injections of 200 mg., repeated daily or on alternate days for four to six doses. After several days of oral medication, most patients found that one capsule in the evening was sufficient to afford relief and only one capsule was prescribed thereafter.

In Group I, 54 patients were in the first trimester, 23 in the second, two in the third, and one was a postpartum patient. Treatment was continued for from one to four weeks. Thirty-six patients had previously failed to obtain relief with a variety of antiemetics of the antihistamine or phenothiazine groups. These patients, in effect, acted as their own controls.

Results

Group I: Trimethobenzamide was effective in 72 patients, partially effective in eight, and ineffective in five (all in the first trimester). Gallbladder disease was a complicating factor in two who were not relieved. Symptoms were so severe as to require intramuscular administration at the outset in 54. Onset of relief was obtained in 24 hours or less in 63 patients, 48 hours in 15, and 72 hours or more in two patients. It was necessary to continue medication for one week in 47 patients, two weeks in 26, three weeks in four, and four weeks in three. Trimethobenzamide was of benefit in 33 patients who had not been helped by other antiemetics; of the five patients who did not respond to the drug, three had taken other antiemetics without effect.

Group II: Trimethobenzamide was effective in 66 patients, partially effective in seven, and ineffective in three. One patient who was not benefited by the drug was in the first trimester, the other two in the last. Symptoms were sufficiently severe in 68 patients to require intramuscular as well as oral medication at the start of treatment.

No evidence of headache, drowsiness, allergies, or other untoward reactions were experienced by any of the patients in either group.

Discussion

It has been shown in laboratory experiments that trimethobenzamide's only specific action

is suppression of the CTZ. No contrary evidence has been observed in clinical trials. The fact that it was effective in 153 (95.6 per cent) of 161 patients treated strengthens the hypothesis that, whatever the etiology of the nausea and vomiting of pregnancy, its immediate cause is the stimulation of the CTZ. In one extensive study of antiemetic agents,[1] it was found that meclizine and meclizine plus pyridoxine were the most effective antiemetics in pregnant patients. Eighteen of the patients in our group had previously received one or the other of these agents without benefit. Trimethobenzamide was effective in 16 of these patients.

Summary

1. Administration of trimethobenzamide to 161 patients with nausea and vomiting of pregnancy resulted in complete relief of symptoms in 138 patients, partial relief in 15, and no relief in eight.

2. In 122 patients symptoms were sufficiently severe to require initial intramuscular administration of 200 mg. of trimethobenzamide for four to six days. The remaining 39 patients received oral medication only. Maintenance dose consisted of one (100 mg.) tablet twice daily.

3. Treatment was continued for from one to four weeks. The majority of patients experienced relief of symptoms within 24 hours; a few patients did not respond until 72 hours had elapsed.

4. Trimethobenzamide was effective in 33 of 36 patients who had not been helped by other antiemetics.

5. No side effects were observed.

6. Trimethobenzamide is one of the safest and most efficacious drugs that we have used for the control of nausea and vomiting of pregnancy.◀

Hyperhidrosis of Feet: Topical Treatment

Excessive sweating of the feet was treated in 75 patients with a dusting powder form of diphemanil methylsulfate (Prantal). Instructions were given to dust the powder into shoes and socks once daily, and men were advised to wear ventilated shoes and socks of cotton rather than synthetic fibers. Hyperhidrosis was eliminated or greatly reduced in all patients. There was no instance of sensitization and no effects indicative of systemic absorption. Oral administration of the agent provides satisfactory relief, but dry mouth and other effects due to parasympathetic inhibition may occur.

Hackbarth, D. E., & Markson, L. S., *Arch. Dermat.*, 83:659,1961.

clinical report

A Clinical Study of Four Anticholinergic Drugs Combined with Tranquilizers or Sedatives

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►*Three preparations in tablet form and two sustained-release medications were used in the treatment of 150 patients with symptoms referable to the gastrointestinal tract. A combination of tridihexethyl iodide and meprobamate, in tablet and sustained-release form, gave good relief in 82% and 76%, respectively.*◄

The purpose of this study was to compare the therapeutic benefits and occurrence and nature of side effects associated with the use of the following commonly employed preparations: meprobamate + tridihexethyl iodide (tablet form), propantheline bromide + phenobarbital (tablet form), hyoscyamine+atropine+hyoscine+phenobarbital (tablet form), prochlorperazine + isopropamide (sustained-release form), and meprobamate+tridihexethyl iodide (sustained-release form*).

*Not yet released for clinical use.

Method of Study

During a period of two years, a total of 150 ambulatory clinic and private patients were treated. All had symptoms referable to the gastrointestinal tract and would ordinarily have been treated with anticholinergics and sedatives or tranquilizers, alone or in combination. All patients were given a thorough physical examination, including x-rays. Those cases in which no specific diagnosis could be made were considered functional, whereas those in which evidence of pathologic abnormality was demonstrated were considered to be organic. Presenting diagnoses included functional disturbance in 74, duodenal ulcer in 52, gastric ulcer in nine, hiatus hernia in six, cholecystitis in three, ulcerative colitis in two, diverticulosis of the colon in two, hiatus hernia with esophagitis in one, and pro-

lapsed gastric mucosa in one.

Each investigator, working independently, treated 50 patients —25 with meprobamate-tridihexethyl iodide† in tablet form, and 25 with one of the other two tablet medications. Because similar results were obtained with the meprobamate-tridihexethyl iodide tablet, these two groups of 25 each are considered as one group of 50 patients. Another 50 patients were treated with sustained-release medication — 25 with a capsule of meprobamate-tridihexethyl iodide, and 25 with a capsule of prochlorperazine-isopropamide.

The majority of patients were treated for one month, none for less than one week. All patients with similar diagnoses were placed on comparable diets and managed as much alike as possible. In addition, the peptic ulcer patients were given antacid therapy. The two sustained-release preparations were administered one capsule twice daily, and the tablets, four times daily (one at each meal and one at bedtime).

Results

The therapeutic effectiveness of each medication was rated as excellent (complete relief of symptoms), good (marked relief), or failure (slight or no relief). Each group of patients was considered as a whole with reference to the drug being studied, and in addition the results for each type of condition (functional or organic) were reviewed. Considering each group, the meprobamate-tridihexethyl iodide combinations (either in tablet or sustained-release capsule) were the most effective, with good or excellent results in 82 per cent of the patients who received the tablet and in 76 per cent of those who received the sustained-release form. The other two tablet preparations produced good or excellent results in 68 and 64 per cent, respectively and the other sustained-release capsule in 60 per cent.

In the functional cases, the meprobamate-tridihexethyl iodide preparations were the most effective, 77 per cent of the patients deriving relief with the tablet and 71 per cent with the sustained-release capsule. The other combinations were effective in 40, 54, and 53.3 per cent, respectively.

In organic cases, the meprobamate-tridihexethyl iodide tablet afforded relief in 86 per cent of the patients treated. The sustained-release form of meprobamate-tridihexethyl iodide produced symptomatic improvement in 82 per cent. Other preparations were effective in 87, 75, and 70 per cent of the patients, respectively.

†*Milpath*®, Wallace Laboratories, Cranbury, New Jersey.

Incidence of Side Effects

The meprobamate-tridihexethyl iodide tablet produced side effects in nine (18 per cent) of the 50 patients, eight of these reporting slight drowsiness and one dryness of the mouth. The sustained-release form of the meprobamate-tridihexethyl iodide was well tolerated, with three (12 per cent) of the 25 patients complaining of mild drowsiness.

Of the other two tablet preparations, one produced side effects in 15 (60 per cent) of 25 patients, and the other produced side effects in two (eight per cent) of 25 patients. The other sustained-release preparation produced side effects in 12 (48 per cent) of 25 patients.

Discussion

In the symptomatic treatment of some gastrointestinal disturbances, the use of preparations containing combinations of anticholinergics and tranquilizers or sedatives has become widespread. Most of the currently available preparations of this nature produce some therapeutic effects. At the same time, they also cause, to varying degrees, undesirable side effects. When these are severe, the patient on his own initiative will frequently discontinue or interrupt medication to the detriment of the entire therapeutic regimen.[1] Good patient cooperation is more likely to be obtained through the use of a preparation that has few or no side effects, and yet produces prompt and marked improvement.

In this study, the meprobamate-tridihexethyl iodide combination was of high therapeutic efficacy and caused few side effects. This preparation, in a group of patients with both functional and organic disturbances, produced symptomatic improvement in more patients (82 per cent) than any of the commonly employed preparations with which it was compared.

Summary and Conclusions

Four different anticholinergic combinations with tranquilizers or sedatives (two in the multiple dosage form and two in the sustained release form—prochlorperazine with isopropamide and meprobamate-tridihexethyl iodide) were studied for therapeutic effectiveness and side effects on 150 patients with gastrointestinal disorders. Based on a comparative evaluation of the therapeutic effects and the incidence and nature of side reactions, the meprobamate-tridihexethyl iodide combination appears to be the most effective in either tablet or sustained release form.◀

1. Bandes, J., *Am. J. Gastroenterol.*, 30:600-607,1958.

Clinical Study of a Non-Narcotic Combination for Relief of Postpartum Pain

WILLIAM J. FITZGERALD, M.D.,*
JOHN J. CARRIER, M.D.,† and
LENNART CARLSON, M.D.,† *Albany, New York*

▶*Of 350 patients treated, the majority experienced relief of pain associated with episiotomy, dysuria or cystitis, cephalgia, breast engorgement, and after-birth pain. These patients experienced fewer side effects than a control series given aspirin and codeine for control of similar pains.*◀

The purpose of this investigation was to evaluate a preparation for amelioration of postpartum pain with regard to its analgesic effectiveness and the side reactions which accompany its use. The combination used consisted of 75 mg. ethoheptazine and 325 mg. of acetylsalicylic acid,†† which was equal in analgesic potency to codeine 15 mg.

Results of previous clinical and pharmacologic studies indicate that ethoheptazine is a moderately potent analgesic.[1,2] Several investigators found that ethoheptazine has satisfactory analgesic properties, no tendency to addiction,[3-5] and produces few side effects.[2,3]

Plan of Study

The study was made on 350 unselected obstetrical cases (200 ward and 150 private) at the A. N. Brady Maternity Hospital, a teaching unit of the Albany Medical College. The 250 multigravidas and 100 primigravidas ranged in age from 15 to 42 years. The dosage used for all patients was two tablets two hours after delivery, repeated every four hours for four doses. Relief of pain which usually occurs in the 48 to 72 hours after delivery was the purpose of administering

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†Resident Staff, A. N. Brady Hospital.
††*Zactirin*®, Wyeth Laboratories, Philadelphia, Pennsylvania.

1. Glassman, J. M., & Seifter, J., *J. Pharm. & Exper. Therap.*, 116:23,1956.
2. Batterman, R. C., et al., *Am. J. M. Sc.*, 234:413,1957.
3. Grossman, A. J., et al., *Am. J. Geriatrics*, 4:187,1956.
4. Eddy, N. B., *Am. J. Geriatrics*, 4:177,1956.
5. Class, L. J., et al., *J.A.M.A.*, 166:1829-1833, 1958.

TABLE 1

RELIEF OF POSTPARTUM PAIN IN 350 PATIENTS TREATED WITH *ZACTIRIN*

TYPE OF PAIN	NO. OF PATIENTS	DEGREE OF RELIEF			
		COMPLETE	50% OR MORE	LESS THAN 50%	NONE
After-birth pains	280	82%	12%	6%	0
Breast engorgement	10	90%	10%	0	0
Cephalgia	8	38%	62%	0	0
Dysuria cystitis	10	50%	50%	0	0
Episiotomy	42	90%	8%	2%	0
TOTAL	350				

medication.

An additional 200 patients served as controls, and were given a combination tablet with 30 mg. codeine and 600 mg. acetylsalicylic acid. Each patient received one tablet every three hours for the first 24 to 48 hours postpartum, for a total of 10 to 14 tablets.

Results

The degree of relief from pain and incidence of side effects were determined by interviews with patients 8, 16, 36, and 72 hours after delivery. Answers to questions about pain relief were also noted by supervisors in charge of ward and private patients. The final tabulations were based on the answers to interviews by supervising floor nurses, resident staff, and obstetricians.

To be satisfactory, response had to be present during the entire period of observation. If the response was favorable at the onset of treatment, but with continued therapy the pain was not adequately controlled, the trial was considered unsatisfactory.

Side Effects

All patients were carefully interrogated as to nausea, vomiting, epigastric distress, dizziness, and constipation; and as to side effects such as tachycardia, excessive sweating, drowsiness, headache, severe anorexia, nausea, or vomiting. Of 350 patients given the ethoheptazine citrate-acetylsalicylic acid combination, 20 experienced nausea, 10 vomiting, 15 epigastric distress, 6 drowsiness, and 12 tachycardia (mild). Of the 200 control patients who were given codeine and aspirin, 43 experienced nau-

TABLE 2

RELIEF POSTPARTUM PAIN IN 200 PATIENTS TREATED WITH ASPIRIN AND CODEINE

Type of Pain	No. of Patients	Degree of Relief			
		Complete	50% or More	Less than 50%	None
After-birth pains	120	62%	20%	10%	8%
Breast engorgement	20	70%	15%	10%	5%
Cephalgia	15	37%	43%	20%	0
Dysuria, cystitis	10	6%	60%	30%	4%
Episiotomy	35	74%	20%	6%	0
Total	200				

sea and vomiting, 34 epigastric distress, 31 drowsiness, and 49 tachycardia.

Summary and Conclusions

This combination of ethoheptazine citrate and acetylsalicylic acid is a satisfactory analgesic for usual types of pain occurring during the postpartum period. It is not habit-forming. The incidence of side effects such as nausea, vomiting, cephalgia, and tachycardia is low. Systolic and diastolic blood pressures in all patients treated with Zactirin were within normal limits. There were no allergic manifestations in any patient in this series.◀

Umbilical Cord Tied by Automatic Device

The instrument, resembling a pistol in shape and operation, has a hook on the end of a barrel that telescopes inside an outer barrel. With the baby placed on the mother's abdomen and the slack cord picked up by the hook, the trigger is pulled, bringing a loop of cord within the barrels. A stronger pull on the trigger then slips a rubber band off the outer barrel and around the cord. The cord, untouched by the obstetrician's hands, is then delivered by release of the trigger. The rubber band remains in place and drops off with the cord within 2 weeks. Of 2663 cords tied in this way, only 1 (tied by a new intern) required retying.

Gravlee, L. C., & Jones, W. N., *J.M.A. Alabama*, 29:436-439,1960.

clinical report

Digestive Enzymes for Infant Colic: Preliminary Report

BRIAN LEES, M.R.C.P.,* *Milwaukee, Wisconsin*

►*A preparation containing proteolytic, amylolytic, and lipolytic enzymes was added to the formula of 111 infants with symptoms of colic. Response was good to excellent in 67 per cent, fair in 14 per cent, and poor in 19 per cent. No side effects attributable to the use of the product were reported.*◄

It has been said (and is probably pertinent) that the human baby comes into the world more underdone than the young of other mammals.[1] To the most casual observer it is obvious that during the first few months of life many adult functions are developed only to a rudimentary degree.

Digestive upsets in infancy are common—and the syndrome of infant colic is well recognized by most physicians. Many parents and physicians are vividly aware of the domestic turmoil which can accompany episodes of colic. The baby is often hungry at frequent intervals, but fails to settle after feeding. Flatulence may be pronounced; intermittent crying may give way to screaming with drawn up knees and restlessness, indicative of abdominal pain. Frequently, symptoms are worse at night, so that the parents stand watches during the dark hours trying to pacify the obstreperous newcomer.

Many theories have been advanced to explain the symptoms of infant colic. They range from the purely psychological (placing the blame on the mother) through careless feeding habits, food allergies, autonomic imbalance and physiological immaturity of the gastrointestinal tract.[2] It seems probable that in different cases all these causes may be operative. Yet there are many infants fed on the bottle in whom no cause for the symptoms can be established.

In these cases, it would seem

*Director of Medicine and Research, Kremers-Urban Company, Milwaukee.

1. Brennemann, J., Brenneman's Practice of Pediatrics, Vol. I., 25,1943.

2. Wessel, M. A., et al., *Pediatrics*, 14:421,1954.

logical to reconsider the postulate of physiologic immaturity of the gastrointestinal tract. Babies fed on the bottle are receiving an artificial diet (however the cow's milk is modified), and in the absence of a well established digestive capacity it is easy to believe that the gastrointestinal tract becomes overtaxed. The bowel may find it difficult to pass along partially digested food. The passage of food may be blocked by a tight ileocecal valve. Extra strong peristaltic contractions arising to remedy these factors may be the cause of the abdominal pain which manifests itself as colic.[3]

It has been established[4] that the administration of digestive enzymes to older persons, in whom digestive function is thought to be reduced, may bring about great benefit in alleviating the symptoms of non-specific indigestion. The purpose of the present study was to establish whether digestive enzymes would relieve symptoms of maldigestion in infants—particularly the fully developed syndrome of infant colic.

Material and Methods

For maximum convenience the enzymes were incorporated into a rapidly dissolving tablet* which could be added to the formula in the infant's feeding bottle. The enzymes employed were those previously used in older patients.[4] They are nontoxic, accurately standardized, stable and have a reproducible digestant capacity. Each tablet contains 5 mg. of proteolytic enzyme (from carica papaya); 10 mg. of amylolytic enzyme (an alpha amylase from aspergillus oryzae); 20 mg. of lipolytic enzyme (derived from the pancreatic glands of Federally inspected animals by a special process of extraction).†

The majority of the investigators who took part in this study were experienced, full-time pediatricians. The diagnosis of infant colic was made on clinical grounds and the investigators were asked to grade their cases into severe, moderate, and mild colic.

Reports were analyzed on 111 cases. Seventy-eight per cent of the infants were under age four months; 15 per cent in the age group four to seven months; and seven per cent were older. Male to female ratio was almost 2:1. The majority of the infants re-

3. Brackett, A. S., *Yale J. Biol. & Med.*, 20: 555,1948.
4. Chesrow, E. J., et al., *Geriatric Inst.*, 4:24, 1961.

**Formulase™*, Kremers-Urban Company, Milwaukee, Wisconsin.

†The activity of the enzymes is as follows: The proteolytic enzyme will digest 200 times it own weight of protein per hour. The amylolytic enzyme will digest more than 1900 times its own weight of starch per hour. The lipolytic enzyme will digest 100 times its own weight of fat (the time varying according to the nature of the fat).

ceived one of the enzyme tablets at each feeding. In a few of the older infants (around six months) the dosage was two tablets at each feeding. In only a few cases was the feeding regimen changed as part of the treatment.

The duration of the colic for which the infants were treated ranged from a few days to several months—in the majority of cases, one week to one month. The duration of treatment with the product varied from a few days to a month or more. Most of the cases were close to, or within, the range of 10 days to two weeks.

Results

Of 55 patients with severe colic, 40 had good or excellent response, three fair, and 12 poor or none. Of 48 with moderate colic, 28 had good or excellent response, 12 fair, and eight poor or none. Of eight patients with mild colic, seven had good or excellent response and one a fair response. Thus, 67 per cent of the cases showed a good or excellent response, 14 per cent a fair, and 19 per cent a poor response or none at all.

Other Effects and Side Effects

In three cases the investigator reported that, in addition to relief of colic, hard stools returned to normal. In one older child (thought to be suffering from congenital cystic disease of the pancreas) there was marked relief of long-standing digestive symptoms. This child was given two tablets three times a day with meals.

No side effects were reported which could be attributed to the use of the product. In one infant a rash developed, but this subsided spontaneously while treatment continued. Theoretically, an infant could develop an allergy to one or more of the enzymes, but no such case has been reported to date.

Discussion

This study was purposely confined to bottle-fed babies. Reports tend to indicate that digestive disturbances (including colic) are more common in this group than those who are breast-fed. Also it seems possible that other factors (e.g. psychological) play a more prominent part in the feeding difficulties of breast-fed as compared with bottle-fed infants.

The postulate that physiologic immaturity of the gastrointestinal tract is a cause of infant colic was put to the test. Relief of symptoms was sought by increasing the digestive capacity, notably by the addition of digestive enzymes to the formula.

The reports seem to indicate that relief was afforded fairly

soon after initiation of treatment, or not at all. It seems arguable, that in the patients who responded, digestive capacity was not sufficient to handle the diet and that relief was brought about by the additional enzymes. In almost 20 per cent of cases (those who showed no response) it seems likely that there was some other cause for the symptoms. Other causes may also have been operative in those infants who showed only a fair or equivocal response to the treatment.

In this preliminary study, it is felt that good grounds have been established to relate digestive incapacity to infant colic in a substantial proportion of bottle-fed babies. It is hoped that this report will encourage further work concerning the role of digestive enzymes in alleviating digestive upsets in infancy.

Summary

The postulate that physiologic immaturity of the gastrointestinal tract may be an etiologic factor in infant colic was investigated. With each feeding, supplementary digestive enzymes were given to 111 infants suffering from colic. In 67 per cent of the cases the result of treatment was classed as excellent or good. Fourteen per cent showed a fair result, and 19 per cent had no response.

Digestive insufficiency as a cause of infant colic (and the role of digestive enzymes in its treatment) deserves further investigation.◀

Motion Sickness: Treatment with Sublingual Antihistamine

The preparation used in 100 patients who were passengers on a commercial steamship line contained an antihistaminic antinauseant (buclizine HCl) with pyridoxine HCl, scopolamine hydrobromide, atropine sulfate, and hyoscyamine sulfate (Bucladin). The tablets, designed to dissolve promptly in the mouth under the tongue, were administered to 15 patients with mild symptoms, 26 with moderate symptoms, 57 with severe symptoms, and 2 with very severe symptoms. When multiple doses were required, tablets were given at 4 to 6-hour intervals for a maximum of 3 tablets daily.

Results in 90 patients were excellent, good in 7, moderate in 1, and poor in 2. In many of these patients, symptoms subsided within an hour after the first dose. No side effects of any significance were noted.

Corso, J. E., *New York J. Med.*, 61:1278-1280, 1961.

clinical report

Relief of Eclamptic Convulsions with Chlordiazepoxide

JAMES E. GILBERT, M.D.,* *Aberdeen, South Dakota*

►*A woman of 22 was admitted to hospital at term because of convulsions which had appeared an hour earlier. Given chlordiazepoxide in 100-mg. doses, she responded and in an hour was free of further convulsions. She was delivered of a normal infant. There were no prior indications eclampsia was developing.*◄

Convulsions followed development of eclampsia in a woman of 22 at term. When admitted to the hospital an hour later, her blood pressure was 140/104, urine was 4-plus for albumin. She was given 100 mg. of chlordiazepoxide† intramuscularly in the left gluteal region, and three minutes later 20 mg. of hydralazine HCl (Apresoline). Seven minutes later she was still having severe convulsions, and 20 mg. hydralazine intravenously was repeated. Ten minutes afterwards the patient was still having convulsions and 100 mg. of chlordiazepoxide was administered intravenously. The convulsions ceased completely after this injection. The blood pressure was 130/98. At 9:30 p.m., an hour after the second chlordiazepoxide injection, the patient was free of convulsions and was responding. The course thereafter until delivery was as follows:

9:50 p.m. The patient was very restless, blood pressure 148/110. Chlordiazepoxide, 100 mg. intravenously, was given.

10:30 p.m. No further convulsions had occurred, but the patient continued to be restless. Blood pressure was 118/82. Chlordiazepoxide, 100 mg. intravenously, was given.

11:45 p.m. No further convulsions had occurred, blood pressure was 118/82, and strong uterine contractions were commencing.

1 a.m. Uterine contractions were continuing, there were no convulsions, and the patient was

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†*Librium*®, Hoffman-La Roche Inc., Nutley, New Jersey.

resting well between pains. Rectal examination revealed that the cervix was dilated 3 to 4 cm. Meperidine HCl (Demerol), 100 mg. intramuscularly, was given.

2:45 a.m. Bearing-down pains were present and the cervix dilated 5 to 6 cm. Blood pressure was 140/100.

4:40 a.m. The pains were becoming stronger with bloody show. Meperidine HCl, 100 mg. intramuscularly, was given.

6:00 a.m. The membranes ruptured. Blood pressure was 138/104.

9:20 a.m. The os was completely dilated, and at 9:30 a.m. the patient was delivered by outlet forceps under nitrous oxide and oxygen cyclopropane anesthesia, of a 7 lb. 6 oz. boy. The infant exhibited spontaneous respiration and had no signs of lethargy or toxicity.

Progress in the postpartum period was excellent. The blood pressure continued to fall and was stabilized at 100/72 at the time of discharge six days after delivery. The urine was albumin-free two days after delivery.

Discussion

The prenatal record for the third trimester during which the patient was examined on three occasions did not indicate any abnormality suggestive of eclampsia. On September 21, the patient weighed 160 pounds, and had a blood pressure of 86/60; on October 5, she weighed 149, and the blood pressure was 96/68; on October 20, she weighed 150 and blood pressure was 100/70. Urine was negative for albumin in all three examinations. She was admitted to the hospital on November 19.

The patient had had a spontaneous abortion two years prior to the pregnancy discussed in this report. At that time she reported no particular difficulties in menstruation, and her periods had been regular. She had been admitted on September 9, 1958, during the third month, with vaginal bleeding and lower abdominal cramps. On the evening prior to admission she reported having had lower abdominal cramps, and a small amount of bleeding from the vagina. On the day of admission, the cramps became more severe and the flow heavier. Up to that time the pregnancy had been uneventful. Blood pressure was 100/70 and the urine negative for albumin. On September 10, the patient had a spontaneous abortion. Pathologic examination of the specimen revealed placental tissue undergoing necrotic changes. There was nothing significant in the remaining past history.

The sudden occurrence of the convulsive episode in the most recent pregnancy remains unexplained. Of particular interest is

the fact that chlordiazepoxide effectively relieved the seizures within a short time. This psychotropic agent has been shown to possess, in addition to specific anti-anxiety properties substantiated by many clinical studies, pronounced anticonvulsive effects in animals.[1] Although chlordiazepoxide has been found of value in other types of convulsive seizures,[2-4] to my knowledge this is the first instance of its use in convulsions with eclampsia.

On the basis of the experience in this case, the use of chlordiazepoxide in convulsive seizures associated with pregnancy merits further investigation.◀

1. Randall, L. O., *Dis. Nerv. Syst.*, 21:7,1960.

Permission to report this case was granted by G. H. Steele, M.D., attending obstetrician to St. Luke's Hospital, Aberdeen.

2. Kaim, S. C., & Rosenstein, I. N., *Dis. Nerv. Syst.*, 21:46,1960.
3. Bercel, N., *Dis. Nerv. Syst.*, 22:17,1961.
4. Cohen, N. H., et al., *Dis. Nerv. Syst.*, 22: 20,1961.

Conization of the Cervix Not an Innocuous Procedure

Cold knife conization to remove the squamocolumnar junction of the cervix for histopathologic examination is mandatory if a suspicious cervical lesion is seen, or if the cervix appears normal but exudate contains suspicious cells. Electroconization is the treatment of choice for deep and persistent cervicitis, endocervicitis, and erosion that has defied more conservative measures. Neither procedure ought to be done if superficial cauterization of the cervix, after taking specimens of exudate from the area for screening examination, will suffice. Complications such as infection, stenosis and early and late postoperative hemorrhages occur frequently. Although hemorrhage is usually minor and transient, it can be catastrophic. These complications can lead to dysmenorrhea, infertility, repeated abortions and premature labor.

The often serious and sometimes uncontrollable hemorrhage which may occur as a sequel of cervical amputation by the Strumdorf technique may occur even with cold knife and electroconization of the cervix. To decrease the vascularity of the cervix before conization, 2 fairly deep sutures may be placed at the 3 o'clock and 9 o'clock positions just below the level of the internal os. Regardless of surgical technique or special instruments or medications used, conization of the cervix is sometimes followed by complications, some of which are serious, and should not be done unless specifically indicated.

Horner, H., *California Med.*, 92:263,1960.

Dimethpyrindene in Pruritic and Allergic Skin Disorders

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HILLIARD M. SHAIR, M.D.*, *Quincy, Illinois*

►*Of 96 patients with pruritic and allergic skin disorders, 47 had excellent and 23 good responses to therapy with an oral antihistaminic agent, dimethpyrindene. Dosage of this drug, chemically a member of the indene series, varied from 4 to 25 mg. daily. Side effects were seen in seven cases.*◄

Two forms of dimethpyrindine,† chemically a member of the indene series, were used—the 1 mg. tablet and the 2½ mg. "long-acting" tablet. There was little difference between the two forms other than what was expected with the difference in dosage.

Table 1 lists the disorders treated and the results obtained.

TABLE 1
RESPONSE OF 96 PATIENTS TO *FORHISTAL* THERAPY

Disease	Total Cases	Results			Side Effects
		Excellent	Good	Poor	
Atopic dermatitis	32	19	4	9	2
Urticaria and erythema multiforme	18	10	3	5	1
Contact dermatitis	14	5	7	2	0
Eczema including nummular and hand eczemas	17	6	4	7	2
Lichen simplex chronicus	4	2	1	1	1
Dermatitis hiemalis	3	0	2	1	1
Pityriasis rosea	2	1	1	0	0
Dermatitis herpetiformis	2	1	1	0	0
Mycosis fungoides	1	0	0	1	0
Granuloma annulare	1	1	0	0	0
Recurrent vesicular eruption	1	1	0	0	0
Solar dermatitis	1	1	0	0	0
Total	96	47	23	26	7

In evaluating effectiveness, the ability of dimethpyrindene to decrease itching (resulting in more comfort and less scratching) was judged. A total of 96 patients were treated with dimethpyrindene in dosages varying from 4 to 25 mg. daily. The side effects encountered in seven patients, other than drowsiness, were not related to the dosage used. These consisted of periorbital and facial edema, nausea, vomiting, increased itching, morbilliform eruption, and nervousness.

Other studies[1-4] in which a total of 240 cases were reviewed, reveal that dimethpyrindene compares favorably with other antihistamines. Results in this series of 96 patients confirms that the drug is effective. This antihistamine is regarded as another useful oral drug in the treatment of both pruritic and allergic skin disorders.◀

•Dermatology Section, Physicians and Surgeons Clinic.
†*Forhistal®*, Ciba Pharmaceutical Products, Inc., Summit, New Jersey.

1. Bubert, H. M., *Maryland M.J.*, 9:376,1960.
2. Schiller, I. W., *Bull. Tufts, New England Med. Center*, 6:83,1960.
3. Thomas, W. Jr., & Kelly, F. R., *Ann. Allergy*, 18:876,1960.
4. Carpenter, C. L., et al., *South. M.J.*, 53: 1017,1960.

Ragweed Pollinosis: Treatment with Single Annual Injection

A single injection of emulsified ragweed pollen extract was given to each of 1064 patients, aged 3 to 77, who were allergic to ragweed pollen. Of these, 11 had extra-respiratory system allergy, 386 had total respiratory tract pollinosis, 456 had upper and 211 lower respiratory tract symptoms. Duration of the allergy varied from 3 to 50 or more years. For comparative purposes, 500 patients received traditional types of treatment.

Doses based on conjunctival and skin test responses were given to 450 patients, the remainder receiving doses of 5000, 7500, and 10,000 P.N.U. given at random. Of the 1064 receiving one injection of emulsified pollen extract, 144 reported symptoms. Differences in response to the various dosages were not significant. There was no clear relationship between the dates of the injections and the doses of extract administered and the dates of onset, severity, or durations of the symptoms, if any. Fewer than 2 per cent were reactive only to the ragweed pollen. Of the 500 who received traditional types of treatment, almost 200 reported symptoms.

Brown, E. A., *Ann. Allergy*, 18:631-662,1960.

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Postoperative Myocardial Infarction

CHARLES L. BURSTEIN, M.D., et al., *New York, New York*

►*Preoperative administration of 100 mg. phenobarbital reduced blood pressure in an elderly woman from 180/100 to 120/80. Acute, sudden hypotension developed in the recovery room five hours after operation. Electrocardiogram signs of myocardial infarction of the anterior wall contributed to this final diagnosis.*◄

A woman of 68 was admitted with a diagnosis of acute exacerbation of cholecystitis with cholelithiasis. Preoperative findings included essential hypertension of 180/100 and ECG evidence of sinus tachycardia—112 per minute, ischemia of the anterior wall, and incomplete right bundle branch block. Temperature was 101.6°, pulse 100.

Preanesthetic medication was 100 mg. pentobarbital and 0.4 mg. atropine. On arrival in the operating room 55 minutes later, blood pressure was 120/80, pulse 104, respiratory rate 24. Anesthesia was induced with 10 cc. 2.5% thiopental sodium solution and was supplemented with cyclopropane and oxygen in a closed CO_2 absorption system. A total of 40 mg. of succinylcholine was injected intravenously, and endotracheal intubation was accomplished readily. Anesthesia was maintained with cyclopropane, oxygen, and "top" ether. An intravenous drip of succinylcholine, 0.1%, for a total of 50 mg. also was used. Respirations were controlled artificially by intermittent manual compression of the breathing bag.

For the first 30 minutes of surgery, blood pressure was 120/80, pulse 90 to 100; during the next 25 minutes blood pressure rose to 140/90, pulse remaining at 100. At the end blood pressure was 120/90, thereafter rising to 150/90, without change in the pulse rate. Blood loss had been minimal, no replacement necessary.

Postoperative Course

On arrival in recovery room blood pressure was 120/96, pulse 100. Patient responded readily to questioning. For five hours blood

pressure was 120/90 to 110/80, then suddenly fell to 90/60, while pulse rose to 118.

Treated with oxygen by mask, in 10° Trendelenburg position, two doses each of 15 mg. of Vasoxyl, intramuscularly, no improvement. An intravenous drip of Levophed bitartrate was begun and blood pressure was maintained at 110/75, pressure 96 to 100. The next morning blood pressure fell to 88/66, ECG revealed an anterior wall infarction, and the patient was treated accordingly. She recovered and six weeks later was discharged from the hospital.

Great care should be exercised in administering depressants to elderly patients. In this case 100 mg. of pentobarbital reduced blood pressure from 180/100 to 120/80, indicating postponing operation and making ECG and ventilometer studies. Thiopental sodium 250 mg. was given intravenously. If such a drug is to be given to an elderly, poor-risk patient, it should be slowly, in 25-mg. increments, to the point of grogginess, allowing 45 seconds for full effects.

Acute and sudden hypotension in the recovery room five hours after the end of the operation demanded thought of hemorrhage, and investigation. The dressing was inspected and was found to be dry, blood showed 15 Gm. hgbn. and 43% hematocrit. The only medication had been 25 mg. of meperidine HCl 1½ hours previously. No transfusion had been given.

Other possible causes ruled out included adrenocortical insufficiency, potassium deficiency, cerebral vascular accident, embolism, and congestive heart failure.

ECG signs of myocardial infarction of the anterior wall contributed to this final diagnosis.◀

New York J. Med., 60:3136-3138,1960.

Infant Colic: Treatment with Antihistamine-Pyridoxine Combination

This combination (Bonadoxin Drops) produced good to excellent results in 14 of 15 infants suffering from colic. The one infant who did not respond to the drug was later found to have a milk allergy. There were no toxic or allergic reactions in any of the patients, all of whom were given the drug in doses of 0.5 to 1.0 cc. 2 or 3 times daily for from 5 to 90 days. Ages of the 28 infants in the study ranged from 11 to 70 days.

Liddle, W. D., Jr., *Virginia M. Month.*, 87: 568-570,1960.

Place of Radiotherapy in Treatment of Cancer of Larynx

M. LEDERMAN, M.B., D.M.R.E., *London, England*

►*In a series of 807 previously untreated cases, 70 per cent were glottic, 21 per cent supraglottic, and nine per cent subglottic in origin; one was not classified. The three and five year survival rates for all patients was 60 per cent and 48 per cent respectively. Only 7.5 per cent of patients were women.*◄

During the period 1933-59, of 959 cases of laryngeal cancer seen at one hospital, 807 were referred without any previous treatment having been given. Other material for this study has been drawn from two other ear, nose and throat hospitals.

The advent of radiotherapy, advances in surgery, and, above all, increased knowledge of the natural history of laryngeal cancer have made necessary a new classification of laryngeal cancer. The three forms of tumor arising within the larynx that have been identified are the glottic, the subglottic, and the supraglottic. Each form behaves in its own special fashion, has its own prognosis, and often requires different management.

In this series of 807 previously untreated cases, 559 (70 per cent) tumors were glottic, 174 (21 per cent) supraglottic, and 73 (nine per cent) subglottic in origin; one was not classified.

Cancer of the larynx is essentially a disease of middle-aged men; only 7.5 per cent of the patients were women. The mean age for both men and women was 61.2 years. It is most unusual to encounter laryngeal cancer, particularly vocal-cord cancer, in the nonsmoker. A previous history of papilloma, leucoplakia, or keratosis was only occasionally encountered.

Therapy

Early laryngeal cancer can be treated successfully by radiotherapy or surgery. The advantages of radiotherapy are avoidance of an operation, preservation of a normal voice, and the patient is given two chances of

survival. If he submits to surgery first and recurrence takes place the radiotherapist can do very little for him. In this series all early cases without laryngeal fixation and lymph-node metastases received radiotherapy without any equivocation. For the advanced case surgery is the mainstay of treatment for stage III and IV cases, particularly when complicated by laryngeal fixation, lymph-node metastases, or perichondritis; and for recurrent cases after previous conservative surgery or radiotherapy.

The prognosis by any method of treatment for advanced cases is not good, although a preliminary course of radiation is of value. Extensive inoperable tumors, particularly in elderly patients, were treated by palliative radiotherapy alone; but the advanced age of the patients was never used as an argument against the routine employment of radiotherapy if the tumor was early. A six-weeks period was allowed to elapse between the end of the treatment and the assessment of its success or failure. If at the end of this period the larynx was normal, the patient was followed up regularly; if the larynx had not returned to normal and there was persistent ulceration, residual infiltration, or fixation, then a direct examination was performed and a biopsy specimen taken only from a frankly tumorous or suspicious area. If, on direct examination, the mucosa was found to be intact and there was no suspicious area, biopsy was not performed, since this procedure might, by destroying the integrity of the mucous membrane, facilitate infection and provoke perichondritis. If the biopsy was positive laryngectomy was performed with the minimum of delay.

In the more advanced cases it was sometimes difficult to reach a decision; the larynx might look suspicious and ulceration, fixation and edema might be present, but biopsy might be repeatedly negative. It is justifiable in these cases to advise laryngectomy, as advanced cases which do not present a reasonably normal appearance after radiotherapy are rarely cured. The timing of the surgery in relation to the radiotherapy was important. The interval of six weeks was chosen, partly because at the end of this time it could be assumed that the maximum tumor regression in response to the radiation had occurred; and, more important still, if the treatment failed there was less chance that during a laryngectomy performed between six and 12 weeks after radiation tissue fibrosis, troublesome bleeding and delayed healing would be encountered to the same extent as would have been the case if the operation

Patients you treat with Metahydrin respond with gratifying benefits. Cardiac patients can breathe more satisfactorily and are not so quickly fatigued by mild exertion. They maintain stable nonedematous weight and, minus the burden of edema, are better equipped to withstand the stresses of daily living which occur even in convalescence. Hypertensive patients enjoy more normal blood pressures, are relieved of headaches, tachycardia and palpitations. Adjunctive antihypertensive therapies—and their well-known side effects—can be reduced. Dietary salt restrictions are usually not necessary, or need not be severe. In any patient requiring a diuretic Metahydrin provides smooth, adequate diuresis. And because all thiazides are *not* alike, the nature of Metahydrin diuresis is more clinically desirable; it expels more water, sodium and chloride and less potassium. In other words, more benefits, fewer troubles.

"Doctor, I walked to your office today!"

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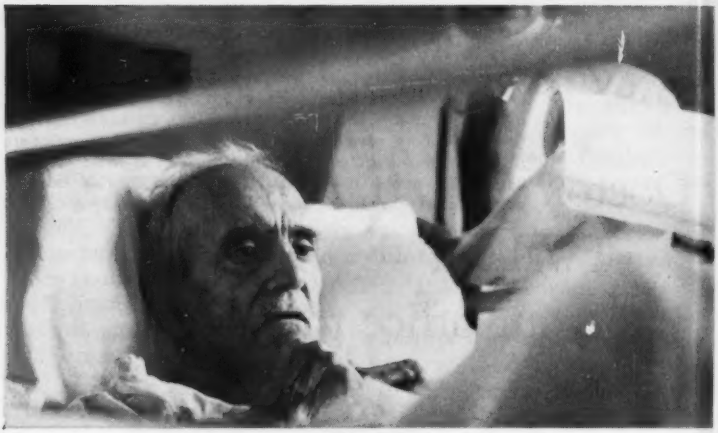

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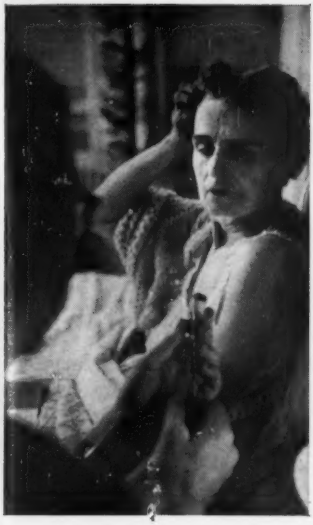

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In patients responsive to anabolic (androgenic) therapy, DURABOLIN helps reduce pain, improves outlook.

OSTEOPOROSIS

DURABOLIN helps relieve pain, increase mobility through remineralization and reconstruction of the skeletal protein matrix.

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DURABOLIN (nandrolone phenpropionate) is a potent long-acting anabolic stimulant. In many types of illness and injury, DURABOLIN helps speed recovery by reversing catabolic processes, rapidly establishing positive nitrogen balance. A single intramuscular injection weekly or bi-weekly for 12 weeks provides effective anabolic stimulation with little risk of virilizing or hepatotoxic effects. And, because long-acting DURABOLIN is given parenterally, you can be certain your patient has received the correct dose, observe his progress directly.

Dosage: Adults: 50 mg., then 25 to 50 mg., i.m., weekly for twelve weeks. Children: 2-13 years—25 mg., i.m., every 2 to 4 weeks. Infants: half children's dose.

Supplied: DURABOLIN (25 mg./cc.) 5-cc. vials, 1-cc. ampuls (box of 3). DURABOLIN-50 (50 mg./cc.) 2-cc. vials.

UNDERWEIGHT CHILDREN

DURABOLIN helps increase appetite, strength and vitality, stimulates gains in solid, muscular weight and height.

was performed after the third month when the post-radiation changes likely to cause these difficulties had become firmly established.

Preparation

Patients in good general condition with early carcinoma required little preparatory treatment. A routine blood count and radiographic examination of the larynx and chest were undertaken. A Wassermann test was done only if there was a history of syphilitic infection or clinical features suggested the possibility.

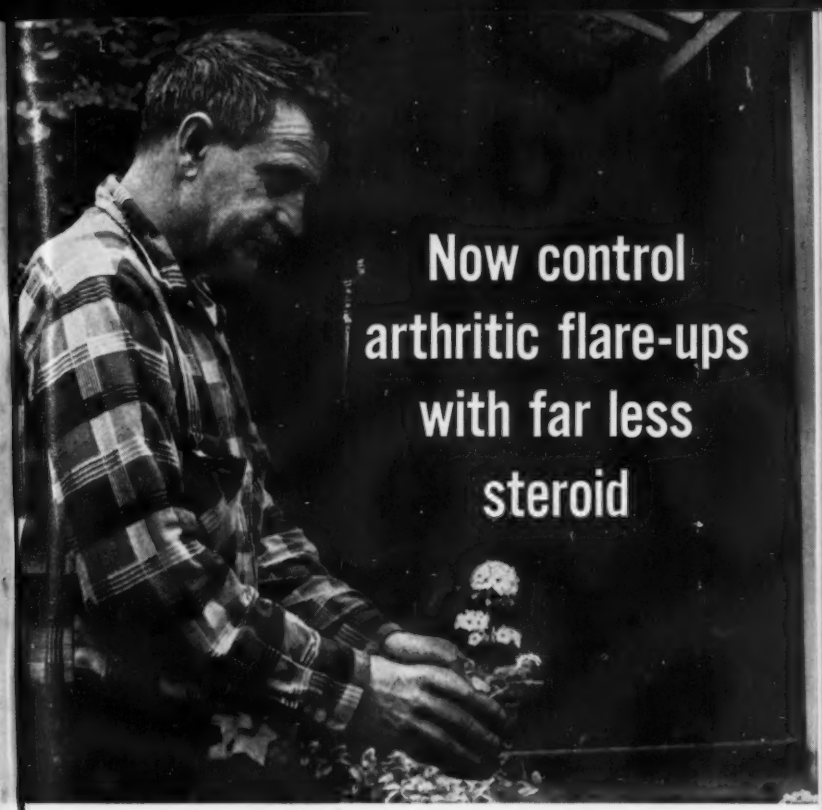
A preliminary biopsy was routinely performed except where a patient had such severe respiratory obstruction that the trauma of biopsy might have precipitated tracheotomy. Occasionally in the very frail or senile patient this procedure was not insisted upon. It is of the utmost importance that a preliminary tracheotomy be avoided if the patient is to receive benefit from a course of radiotherapy. The patient with respiratory obstruction unless *in extremis* was given prompt radiotherapy and by this means tracheotomy was usually avoided. Once a tracheotomy was performed the technique of treatment became more complicated and the prognosis worse.

If a biopsy specimen was found to be inadequate, negative, or unsatisfactory, an attempt was made to repeat if there was clinical doubt concerning the diagnosis.

The technique of treatment depended on the age, general condition of the patient, and the site, histology, and extent of the tumor. A hemoglobin of 60 per cent was regarded as the lowest limit for radiotherapy; below this level, a blood transfusion was given.

All early cases of laryngeal cancer were treated by telecurie therapy utilizing a variety of specially designed head and neck units containing radium, cobalt, and, more recently, radioactive caesium. X-ray therapy at conventional voltages was reserved for the palliative treatment of advanced or recurrent cases. In telecurie therapy a protracted fractionated system of dosage was used: a dose of 300 *r* a day was given to one or two fields for five or six days a week, the total tumor dose varying from 5,500 to 8,000 *r* in six to eight weeks. Post-radiation complications should rarely be encountered and severe damage such as radio-necrosis never.

In dealing with a disease such as cancer, treatment policy must be based upon the evidence provided by treatment results. All results reported here are quoted as crude survival rates. Patients who were lost to followup and those who died from intercur-



Now control arthritic flare-ups with far less steroid

With Somacort to relax muscles and relieve pain, tender joints need less steroid to reduce inflammation

Somacort is a safe, logical step-up in treatment during the rough days when your patients need more than salicylates to keep comfortable and active.

Soma, by itself, benefits many arthritics by relieving the muscle spasm and pain which arise from joint inflammation[1]. Thus with Somacort, which combines Soma with prednisolone, the amount of steroid needed to control inflammation can be kept within more conservative limits.

Somacort is well tolerated even when used for long-term therapy in more serious cases.

1. Wein, A. B.; The Use of Carisoprodol (SOMA) in Orthopedic Surgery and Rehabilitation, Miller, James G., ed., Wayne State University Press, Detroit, Michigan, 1959.

Recommended dosage: 1 or 2 tablets q.i.d. (Each tablet contains 350 mg. carisoprodol, 2 mg. prednisolone.)

SOMACORT®

(carisoprodol, Wallace, with prednisolone)

Wallace Laboratories, Cranbury, New Jersey

rent disease were counted as died of cancer. As many of the patients were elderly and many came from foreign countries where the importance of follow-up is seldom appreciated, these cases represented a serious statistical liability.

A further loading against radiotherapy is the epoch covered by this report, i.e., the prelaryngectomy and pre-antibiotic era, when the cancer hospitals were almost homes for the dying.

The 3- and 5-year survival rates for all patients was 60 and 48 per cent respectively; among the former 21.5 per cent of the patients had undergone laryngectomy after radiotherapy, and among the latter 23.1 per cent.◀

Brit. M.J., 1:1639-1646,1961.

Methocarbamol in Treatment of Black Widow Spider Poisoning

A man of 26, bitten on the penis by a black widow spider, experienced extreme pain within half an hour. In the emergency room 2½ hours later, he was in such great distress that morphine, 10 mg., was given intravenously, followed by 100 mg. of hydrocortisone sodium succinate (Solu-Cortef). Pain was only slightly decreased and the abdominal wall was rigid. Antivenin had been obtained by then, and 2.5 cc. was given intramuscularly, and at the same time, 10 cc. of methocarbamol (Robaxin) intravenously. While the methocarbamol was being injected, a dramatic change in the patient's condition took place. Relaxation of the tense muscles in the abdomen was felt after injection of 4 cc. and became more profound as the injection proceeded.

At conclusion of this injection, the patient was breathing quietly and had no pain. Later he received 10 cc. of 10% solution of calcium gluconate intravenously. Maintenance doses of methocarbamol were given orally, 1 Gm. every 4 hours. Two hours after he arrived at the hospital, the patient wanted to return to work. He spent a comfortable day and night in the hospital and was discharged, having experienced no further pain or discomfort.

While fatalities are rare, the condition is extremely painful due to severe muscular cramps, and untreated patients usually have a protracted convalescence. The changes during and immediately after the injection of methocarbamol and failure of return of symptoms are significant.

Li, J. R., *Virginia M. Month.*, 87:647,1960.

Results of Therapy with Topical Anti-Infective Agent

M. MURRAY NIERMAN, M.D.,* *Calumet City, Illinois*

►*This new combination, used in the form of ointment, aerosol spray, and powder, relieved symptoms of tinea versicolor in 27 patients in three days. Of 100 patients with tinea pedis given both griseofulvin and this agent, 63 were clinically cured and 29 were improved. Recurrences were few.*◄

In spite of the wide variety of antibiotic and chemotherapeutic agents currently available, there are still many dermatologic conditions of microbial etiology for which there is no uniformly satisfactory treatment. Therefore, the development of a new anti-infective medication which proves helpful in some of these indications is always gratifying. A new chemical combination of 9-aminoacridinium and 4-hexylresorcinolate† appears to be such an agent. The group of acridines, of which 9-aminoacridine is a member, has long been known to exert a bactericidal or bacteriostatic effect upon a variety of organisms.[1] Hexylresorcinol has been used effectively as a urinary antiseptic[2] and as an anthelmintic;[3] it has also proved itself an efficient antiseptic when applied locally.[1]

*Department of Dermatology, Chicago Medical School.

†*Akrinol*™, Schering Corporation, Bloomfield, New Jersey.

Materials and Methods

This new drug was used as the sole medication in 65 patients with tinea pedis, in conjunction with oral administration of griseofulvin‡ in 100 patients with tinea pedis, and as the sole medication in 27 patients with tinea versicolor (pityriasis versicolor). Diagnosis was confirmed by positive microscopic examination and/or culture in all cases.

Eighteen of the 65 tinea pedis patients receiving no oral medi-

‡*Fulvicin*™, Schering Corporation, Bloomfield, New Jersey.

1. Goodman, L. S., & Gilman, A., The Pharmacological Basis of Therapeutics, Second Edition, The MacMillan Co., New York, 1955.
2. Leonard V., *J. Urol.*, 12:585,1924.
3. Lamson, P. D., et al., *Am. J. Hyg.*, 13: 568,1931.

cation were instructed to apply the compound being tested to one foot and zincundate, triacetin, or another antifungal agent* to the other foot, for control purposes. Twenty-five of the 100 tinea pedis patients receiving Akrinol and concomitant oral therapy with griseofulvin, 250 mg. four times daily, were instructed to apply the antifungal preparation to only one foot and nothing to the other. In all cases this agent was applied in the form of powder or aerosol spray upon arising and in the form of ointment before retiring. Patients were directed not to use rubber shoes or woolen or nylon footwear.

The 27 tinea versicolor patients received no other medication, with the exception of tincture of green soap. For control purposes, 10 of these patients were instructed to apply the compound being evaluated to one-half of the affected body surface (e.g., front or back of body) and one of three other medications (sodium thiosulfate and vinegar, ammoniated mercury, or half-strength Whitfield's ointment) to the other half. They were instructed to apply the drug in the aerosol spray form upon arising and in the ointment form before retiring. Tinea pedis was selected for this study because it appears to be the only type of ringworm which does not respond satisfactorily in all cases to oral therapy with griseofulvin;[4] tinea versicolor was included because therapy with the hitherto available medications, although generally effective, is quite lengthy.

Results in Tinea Pedis

Of the 65 tinea pedis patients receiving Akrinol only, for periods ranging from one to six months, 10 had apparent clinical cures, as reflected by complete involution of lesions and negative K OH slides, and 47 experienced significant improvement, as shown by progressive regression of lesions and decrease in itching; and five remained unchanged. The medication had to be withdrawn in three cases because of a localized dermatitis venenata. In the 18 cases in which this drug was used on one foot and zincundate, triacetin, or Asterol on the other, it proved as good as or superior to these agents. In contrast to the other three medications, which produced local irritation in several cases, the topical application was well tolerated locally and produced no systemic effects.

Of the 100 patients receiving Akrinol topically and griseoful-

*Asterol®, Roche Laboratories, Nutley, New Jersey.

4. Nierman, M. M., et al., *Illinois M.J.*, 117: 1,1960.

vin, 250 mg. four times daily, orally for periods ranging from three weeks to six months, 63 were clinically cured, 29 were improved, five showed no change, and three exhibited local irritation, leading to aggravation of the condition. In the 25 patients who were instructed to apply the drug to one foot and nothing to the other, the foot medicated showed substantially greater improvement after the first two weeks, and at the end of the third week all patients in this group were applying the medication to both feet. It is interesting to note that 23 of the 91 patients who were clinically cured or improved on the combined regimen of griseofulvin and Akrinol had previously failed to show any improvement on griseofulvin alone.

Results in Tinea Versicolor

All 27 patients became free of lesions within three days; K OH slides became negative within three weeks. Despite these rapid results, treatment was continued for six weeks in the hope of preventing recurrences.

The 10 patients who were instructed initially to apply Akrinol to one-half the affected body surface and another medication to the other half were all switched to Akrinol entirely after three days, in view of the excellent response produced by this agent. There were no recurrences in this group of patients followed for up to one year. The recurrence rate with other topical agents used in tinea versicolor has been higher than 50 per cent within one year.

Discussion

The results suggest that this compound is a useful adjunct when used concomitantly with systemic griseofulvin therapy in resistant cases of tinea pedis. This topical agent appears capable of accelerating improvement in moderately severe cases, and of achieving cures when employed alone in milder cases. Its beneficial effects in tinea pedis appear to be due to its marked antifungal and drying action.

In view of the excellent results the preparation produced in tinea versicolor, for which there had been no truly satisfactory treatment, it is considered the drug of choice in this condition.

The exceptionally low incidence of local irritation observed and the total absence of systemic side effects, probably due to lack of systemic absorption, make it one of the safer topical anti-infective agents.

When used in a number of bacterial and eczematoid dermatoses and as an adjunct in stasis ulcers, the preparation was

FOR THE 4 OUT OF 10 PATIENTS
WITH NO DEMONSTRABLE PATHOLOGY†
CONSIDER

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They may come to you only with a complaint of early morning insomnia or headache or loss of weight. By probing, you may elicit other symptoms, such as anorexia, chronic fatigue, apathy, inability to concentrate, moodiness, and disinterest in everyday activities. But if yours is a typical practice, you have probably found that careful examination of such patients often reveals no somatic pathology. Gradually, the pattern of depressive disorders emerges. While tranquilizers may be indicated in some of these patients, many of them are candidates for the simple psychomotor stimulating effect of Monase. Tests in more than 4,000 patients justify the expectation that Monase will enable many of these patients to sleep better, eat better, and feel better.

‡Estimated average in general practice

*Trademark, Reg. U.S. Pat. Off. – brand of etryptamine acetate

BRIEF BASIC INFORMATION

Description: Monase is etryptamine acetate, a unique non-hydrazine compound, developed in the Research Laboratories of The Upjohn Company.

Indications: Various depressive states: psychoneurotic depressive reactions; psychiatric disorders with prominent depressive symptoms or features; transient situational personality disorders with pathological depressive features; manic-depressive reactions, depressed type; involutional psychotic reactions with depressed features; psychotic depressed reactions.

Dosage: 30 mg. daily in divided doses. Initial benefit may be observed within 2 to 3 days, but maximum results may not be apparent until after 2 or more weeks. Adjustment of dose to individual response should be effected in increments or decrements of 15 mg. daily at weekly intervals. The daily maintenance dose ranges between 15 and 45 mg. In schizophrenics, 30 mg. daily may be useful as an adjunct in activating these patients or brightening their mood.

Contraindications and Precautions: There are no known absolute contraindications to Monase therapy. However, the drug should be used with caution in schizoid or schizophrenic patients, paranoids, and in patients with intense anxiety, as it may contribute to the activation of a latent or incipient psychotic process. Patients with suicidal tendencies should be kept under careful observation during Monase therapy until such time as the self-destructive tendencies are brought under control.

Patients who are on concomitant antihypertensive therapy should be watched carefully for possible potentiation of hypotensive effects. Added caution should be employed in patients with cardiovascular disease in view of the occasional occurrence of postural hypotension, and the possibility of increased activity as a result of a feeling of increased well being.

Despite the fact that liver damage or blood dyscrasias have not been reported in patients receiving Monase, as is the case with any new drug, patients should be carefully observed for the development of these complications. Monase should probably not be used in patients with a history of liver disease or abnormal liver function tests. Also, the usual precautions should be employed in patients with impaired renal function, since it is possible that cumulative effects may occur in such patients.

Monase should be employed with caution in patients with epilepsy since the possibility exists that the epileptic state may be aggravated. Also, because of its autonomic effects, therapy with Monase may aggravate glaucoma or may produce urinary retention. Monase must not be administered concomitantly with imipramine. In patients receiving Monase, caution should be employed in administering the following agents or related compounds in view of possible lowering of the margin of safety: meperidine, local anesthetics (procaine, cocaine, etc.), phenylephrine, amphetamine, alcohol, ether, barbiturates or histamine.

Toxicity and Side Effects: The side effects observed in patients on Monase therapy, in general, have been mild and easily managed by symptomatic therapy or dose reduction. If such side effects persist or are severe, the drug should be discontinued. Alterations in blood pressure, usually in the form of postural hypotension, or more rarely, an elevation of blood pressure, have been reported. Other side effects include allergic skin reactions and drug fever and those that appear to be dose related since they are more likely to occur when the daily dose exceeds 60 mg. These are nausea and gastrointestinal upset, headache, vertigo, palpitation, dryness of the mouth, blurred vision, over-stimulation of the central nervous system, restlessness, insomnia, paradoxical somnolence and fatigue, muscle weakness, edema, and sweating. Following sudden withdrawal of medication in patients receiving high doses for a prolonged period, there may occur a "rebound" withdrawal effect which is characterized by headache, central nervous system hyperstimulation and occasionally hallucinations.

Supplied: Monase, compressed tablets, 15 mg., in bottles of 100 and 500.

Upjohn

75th year

found to be of little value. It was not possible to reproduce the encouraging results in nonfungal dermatoses, as reported by other investigators.[5]

Summary and Conclusions

1. A new chemical combination of 9-aminoacridinium and 4-hexylresorcinolate was used, in the form of ointment, aerosol spray and powder, in 165 tinea pedis patients (as the sole medication in 65 and as an adjunct to systemic griseofulvin therapy in 100) and in 27 tinea versicolor cases.

2. When used alone, this preparation proved as effective as or superior to other available topical agents in the treatment of tinea pedis; when used as an adjunct to systemic griseofulvin therapy, this agent produced improvement in cases which had failed to respond to griseofulvin alone, and accelerated improvement in others.

3. Dramatic results were obtained in all tinea versicolor patients studied; involution of lesions occurred within three days and apparent cure within three weeks.

4. Akrinol exhibited an exceptionally low index of sensitization, with only six of 192 patients developing local irritation.◀

5. Grayson, L. D., & Shair, H. M., *Clin Med.*, 7:317,1960.

J. Indiana M.A., 54:618-624,1961.

Aneurysm of Internal Carotid Artery as Cause of Hemorrhage from the Ear

Sharp bleeding from an ear as a consequence of fracture of the petrous portion of the temporal bone, of neoplasm of the glomus jugulare eroding through and presenting into the external auditory canal, and of carcinoma invading the ear, is well known. In an unusual case, arterial hemorrhage threatening life occurred from an aneurysm of the petrous portion of the internal carotid artery projecting into an area of chronic mastoiditis evacuated by mastoidectomy 6 weeks previously. The patient temporarily controlled hemorrhage on several occasions by self-compression of the common carotid artery. Permanent control was achieved by closure of the artery and oxidized-cellulose packing of the open aneurysm.

Ehni, G., & Barrett, J. H., *New England J. Med.*, 262:1323-1325,1960.

Cancer of Colon and Rectum

The 4 main routes of metastasis of carcinomas of the large bowel are direct extension, vascular spread, metastasis to regional lymph nodes or via the thoracic duct to the systemic circulation, and by exfoliation into bowel lumen or the peritoneal cavity. To study the vascular and lymphatic dissemination of cells from these cancers and their exfoliation into the peritoneum, peripheral blood and blood from regional veins was obtained before, during, and after operation. Lymph was drawn from the thoracic duct, and saline irrigations of the peritoneal cavity were obtained and centrifuged.

Subjects studied included 28 patients with carcinomas of the colon on whom curative operations were performed; 65 patients with cancer of the rectum in whom curative procedures were done; and 12 patients with advanced cancer of the rectum or colon. Tumor cells were found in regional or peripheral blood of 36% of patients with colon cancer and 17% of those with rectal tumors. Exfoliation of cells into the peritoneum was related to serosal involvement by the tumor. There was no positive correlation between the finding of tumor cells in the blood or peritoneal cavity and tissue invasion or lymph node metastases. No patient with advanced carcinoma had tumor cells in the thoracic duct lymph. Each route of spread of cancer cells is relatively independent, and separate measures must be employed for each in the surgical approach to this cancer problem.

Watne, A. L., et al., *Am. J. Surg.*, 100:7,1961.

Course of Mitral Stenosis Without Surgery

Results of medical treatment in 250 patients, followed for from 10 to 20 years, showed that mortality was high in the first 5 years. Of the total, 61% lived 10 years; of Grade I, 84% lived 10 years; of Grade II, 42%; of Grade III, 15%. After 10 years, 40% were of the same severity as before; 40% had died, and 20% were more severely diseased. After 20 years, 80% had died and the status of 13% was unchanged. Progressive heart failure was the cause of death in 67 patients, arterial embolism in 21, single or multiple embolism in 10. Five died of subacute endocarditis before the antibiotic era.


"Doctor...
I'm so tired
all the time"

The remainder died of unrelated disease. Records covering 7 years of surgical treatment show that, compared with medical treatment, more benefit is to be gained from valvulotomy.

Rowe, J. C., et al., *Ann. Int. Med.*, 52:741, 1960.

Maintenance Treatment of Pernicious Anemia

One hundred treated cases of pernicious anemia were maintained on a 2-year trial to assess the adequacy of maintenance therapy with 1000 mcg. of parenteral vitamin B_{12} every 12 weeks. Throughout the period of study 87 patients showed no deterioration as judged by their hematologic values (hemoglobin and red cell count) and serum vitamin B_{12} assays. Thirteen patients showed unsatisfactory red cell levels after 9 to 16 months, and in 11 of these improvement was obtained by increasing the vitamin B_{12} dosage to 1000 mcg. monthly.

One injection of 1000 mcg. of vitamin B_{12} every 8 weeks provides adequate maintenance therapy for most patients suffering from pernicious anemia. However, this dosage is inadequate in a small number of patients and cannot be recommended as a routine measure.

Kinloch, J. D., *Brit. M.J.*, 1:99-100,1960.

is pharmaceutical advertising really "advertising"?

of course it is, though some have called it "education" . . . not <u>really</u> "advertising."

Of course it's "advertising". . . a frankly competitive activity of the American private enterprise system to which this industry belongs. Of course it's "advertising"... created in the hope of getting the physician to note and read; of persuading him, by setting forth proven indications and advantages, to learn about a drug; and of thereby helping him alleviate suffering or cure disease by prescribing it.

"Advertising"? Surely! BUT indisputably different from any other advertising in the world (which is just what has led people to devise various different names for it). For in its proper role it communicates the vital information . . . good, bad, and indifferent . . . and it keeps the physician abreast of each useful new clinical application and each new danger revealed during increasing use of the drug.

There's been a lot of talk about "over-advertising", and there may have been occasional excesses. But consider the potential dangers, in this era of astonishing new drugs, of "under-advertising"... in view of the complexity of modern drug therapy; the lag of 6 to more than 18 months before the appearance of definitive medical articles on new drugs; and the fact that there is no other source of such comprehensive information about a new agent as the company that ran it through the crucial gauntlet of animal pharmacology and clinical investigation.

Coexisting Ruptured Ectopic and Intrauterine Pregnancy

The patient awakened with abdominal cramping, right lumbar backache, and nausea but no vomiting. After a few hours the pains became more severe and localized in the right lower quadrant with the backache persisting. Seen in the office early in the afternoon, she stated that since the onset of the abdominal pain she had been unable to eat and had had three soft bowel movements. She had just recovered from an upper respiratory infection and had a slight cough, was more comfortable with the right lower extremity semiflexed. Her last menstruation was six weeks before, following a premature delivery (only one menstrual period had occurred since delivery and the flow was scant). She had had no symptoms of pregnancy.

Because of the increasing white count and tenderness, surgery was scheduled. An hour before surgery a slight bright red vaginal bleeding occurred. At operation bright red blood was present in the pelvis, in the right oviduct a fresh blood clot. A right salpingectomy was done and the specimen was reported placental tissue. The postoperative course was uneventful and she was discharged on the sixth day.

Two weeks later, the uterus was twice normal size and no vaginal bleeding had occurred. Three weeks after this examination, the uterus was the size of a 3-months pregnancy, Friedman test positive. She was on routine prenatal care plus norethindrone (because of previous premature deliveries). The prenatal course was uneventful and three months after operation a flat plate of the abdomen showed a fetus at the 22nd week of gestation. The patient continued to do well and she was delivered of a vigorous 5 lb. 4 oz. boy. The postpartum course was uneventful; mother and infant were discharged on the fourth day.

The diagnosis of tubal pregnancy in the presence of an intrauterine pregnancy can be difficult, and without the usual signs and symptoms may resemble an acute appendicitis. Probably the total number of coexisting extrauterine and intrauterine pregnancies that have occurred is much larger than the 435 cases reported.

Turner, C. R., *South Dakota J. Med. & Pharm.*, 13:229-231,1960.

Surgical Closure of Incompetent Cervical Os During Pregnancy

Although incompetent cervical os does exist as a clinical entity, it is rarely encountered. It is considered to play a minor role in the etiology of late abortion. Surgical intervention may be made during or between pregnancies. Surgical repair of the incompetent os during pregnancy presents these advantages:

1. The pregnancy is already *in situ*.

2. The procedure is innocuous to mother and fetus.

3. It is applicable to any stage of gestation and to patients first seen during pregnancy.

4. There need be no interference with normal labor and delivery.

There would seem to be no good reason to leave the cervical suture in place and deliver by Cesarean section, since almost all of these patients have easy vaginal deliveries. The psychologic problems attending suturing of the cervix with each pregnancy are more than offset by the trauma and hazards of repeated section.

With the symptoms of profuse vaginal discharge, pelvic pressure, and "lump" in the vagina, examination will usually reveal the cervix to be already effaced and dilated and the amniotic sac bulging into the vagina. At this stage, the outcome is almost inevitably abortion. A poor obstetrical history is not sufficient, many other factors having to be ruled out. Even if the pregnancy is prolonged, the cases in which poor germ plasm, placental abnormality, or poor uterine environment are the etiologic factors will terminate with poor fetal results. Repeated premature rupture of membranes is not sufficient for diagnosis.

The typical history is that of cervical dilation in the second trimester without painful contractions, determined by examination before rupture of the membranes or onset of labor. If this has occurred even once with the delivery of a normal fetus, suture of the cervix is indicated with future pregnancies at the beginning of the second trimester once the period of early spontaneous abortion has passed. With suspicious but inconclusive history, repeated and frequent vaginal examinations must be carried out, and the cervix sutured if there is any sign of effacement. If serious doubt exists, the cervix is better sutured. There is so little risk with this procedure that it may be employed as a therapeutic trial with impunity.

Rovinsky, J. J. & Sher, R. A., *J. Mt. Sinai Hosp.*, 26:494-500,1959.

Doctors and the Law

CHARLES J. FRANKEL, M.D., LL.B., *Editor*

►*Is the doctrine of res ipsa loquitur applicable in a malpractice action based on the defendant doctor's puncturing of the plaintiff's eosphagus while performing a gastroscopic examination?*◄

This question was before the Supreme Court of Pennsylvania in *Demchuk* vs *Bralow*, 170 A. (2d) 868 (1961). The defendant doctor diagnosed the plaintiff's condition as antral gastritis. In order to verify this diagnosis, the defendant performed a gastroscopic examination. Defendant made two attempts to pass the gastroscope into plaintiff's stomach but was unsuccessful because he encountered resistance. He attributed this resistance to persistent cardiospasm; there was no evidence of any other reason or cause. The plaintiff's complaints of much pain in the upper quadrant and difficulty in breathing after the second attempt caused the defendant to suspect the esophagus had been perforated. X-rays disclosed that the gastroscope had punctured the esophagus resulting in a leakage of air into the pleura space around the lungs and a partial collapse of the right lung. Surgery was performed to correct the condition.

The plaintiff presented no expert testimony showing any unskillful or negligent act by the defendant; she contended that the doctrine of *res ipsa loquitur* applied and that such expert testimony was, therefore, not required. The Court said that, since malpractice cases involve a doctor's propriety or skill in his treatment of a patient, a lay jury, presumably lacking the necessary knowledge to render a just and proper decision, must be guided by the testimony of expert witnesses. The only exception is in cases where the matter under investigation is so simple, and the lack of skill or care so obvious, as to be within the range of even non-professional persons' ordinary experience and comprehension, as, for example, where a surgical sponge is left in

the patient's body following an operation. Or assume a case where a surgeon, in removing a tumor from a patient's scalp, lets his knife slip and cuts off the patient's ear, or a case where a doctor, while stitching a wound on a patient's cheek, by an awkward movement thrusts his needle into the patient's eye. It is a matter of common knowledge and experience that such things do not occur if one is exercising ordinary skill and experience in the practice of medicine because they involve ulterior or extraneous acts or omissions the judgment of which would not depend on scientific opinion. The present case does not, said the Court, come within the *res ipsa loquitur* exception to the general rule that, in malpractice actions, negligence must be established by expert testimony. A gastroscopic examination is an intricate procedure requiring specialized training and qualifications. The successful passage of a gastroscope through a patient's esophagus and stomach depends, not only on the doctor's care and skill, but also on the condition of the stomach and esophagus walls and other internal physiological factors. The factors involved in this extremely difficult examination are not matters of common experience and observation by laymen, and they do not involve extraneous acts capable of being judged without scientific opinion. Therefore, said the Court, the defendant cannot be held liable.

►*Can a county medical society exclude from membership a person who is fully licensed to practice medicine and surgery because he has not had, as required by its rules, four years of study at a medical college approved by the A.M.A.?*◄

The New Jersey Supreme Court passed on this question in *Falcone* vs *Middlesex County Medical Society,* 170 A. (2d) 791 (1961).[1] The plaintiff received the degree of Doctor of Osteopathy from the Philadelphia College of Osteopathy, a school which is recognized by the State Board of Medical Examiners but which is not approved by the A.M.A. After passing the prescribed medical examination, the plaintiff was granted a license to practice medicine and surgery. The following year he attended the College of Medicine of the University of Milan which awarded him, on the basis of his work there and at the Philadelphia College of Osteopathy, the degree of Doctor of Medicine. The College of Medicine of the University of Milan is approved by the A.M.A. After entering practice in the county, the plaintiff was admitted to the defendant society as an associate

1. The trial court's opinion in this case was summarized in the February, 1961 issue of Clinical Medicine.

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member. The society's rules provide that a doctor may not be an associate member for more than two years. While the defendant society was considering plaintiff's application for active membership, it learned of his education at the Philadelphia College of Osteopathy. The plaintiff's application was denied because of the society's rule limiting membership to doctors having four years of study at a medical college approved by the A.M.A. Following the denial of his application, the two hospitals where the plaintiff held staff membership terminated such membership under their rule requiring staff members to be members of the defendant society.

The defendant contended that it was a voluntary association and, as such, had a right to determine its membership without judicial interference. The Court said that there had been many cases involving membership practices of voluntary associations. In the earlier cases, courts refused to interfere with membership practices of such associations but those cases involved social clubs, religious organizations and fraternal associations, where the policies against judicial intervention were strong and there were no significant countervailing policies. However, when the courts were, in the later cases, dealing with trade and professional associations exercising virtually monopolistic control, different factors were involved. The intimate personal relationships pervading social, religious and fraternal organizations did not exist; the individual's opportunity of earning a living and serving society in his chosen trade or profession were the controlling policy considerations. In these later cases, courts have ordered admission to membership upon a showing of sufficiently compelling factual and policy considerations; the plaintiff here has, said the Court, made such a showing.

The Court said that it must be remembered that the defendant society is not an association with which the public has little or no concern, but is an association with which the public is highly concerned and which engages in activities vitally affecting the public health and welfare. Through its relationships with the state society, the A.M.A. and the Joint Commission on Accreditation of Hospitals, the defendant society possesses a virtual monopoly over use of local hospital facilities. Because of this monopoly, the defendant, by excluding plaintiff from membership, has precluded him from successfully continuing his practice of obstet-

rics and surgery and has restricted patients wishing to engage him in their freedom of choice of doctors. Public policy strongly dictates that the society's power should not be unbridled but should be viewed judicially as a fiduciary power to be exercised in a reasonable and lawful manner for the advancement of the interests of the medical profession and the public generally. The defendant society did not, said the Court, so exercise its power in dealing with the plaintiff's membership application.

The Court said that the doctrinal controversy between the American Medical Association and the American Osteopathic Association has no bearing on the case because the record shows that the plaintiff received a full medical course along with the degree of D.O. at the Philadelphia school, has an M.D. degree from the College of Medicine of the University of Milan, has an unrestricted license to practice medicine and surgery, has consistently practiced surgery and obstetrics but not osteopathy, is regarded by his medical colleagues as a qualified physician and surgeon and has engaged in no conduct which raises any question as to his competency and ethics as a member of the medical profession. In view of these facts the defendant society's exclusion of the plaintiff from membership was patently unreasonable and beyond the pale of the law. When the defendant engages in action designed to advance medical science or elevate professional standards, it should and will be sympathetically supported. But where, as here, its action has no relation to the advancement of medical science or the elevation of professional standards, but runs strongly counter to the state's public policy and the true interests of justice, it should and will be stricken down.

►*Can an insurer be held liable for medical charges for correcting, during pregnancy, a congenital condition which prevented carriage of foetus for full term and which could have been corrected while the insured was not pregnant, under a policy which excludes coverage for charges incurred "on account of pregnancy?"*◄

The Texas Civil Court of Appeals passed on this question in *Southland Life Insurance Company* vs *Slagle*, 346 S.W. (2d) 627 (1961). An examination, in 1957, by the doctor, whose charges are the basis for the claim here involved, disclosed that the plaintiff was pregnant; shortly thereafter she miscarried. A further examination in March, 1958 disclosed she had an incompetent internal cervical

os which made it impossible for a foetus to be carried to full term. The condition was considered congenital. The doctor planned surgery before the plaintiff should again become pregnant. However, plaintiff became pregnant before the surgery could be performed; this pregnancy also resulted in a miscarriage. When the plaintiff became pregnant for the third time, before the planned surgery could be performed, the doctor decided he would have to operate during the pregnancy. He did so, the operation was successful and the baby was delivered by Cesarean section; it is the charges for the corrective operation that are involved here.

The defendant argued that, if the plaintiff had not been pregnant, the charges sought to be recovered would not have been incurred because the surgery would not have been performed and that it was, therefore, not liable because its policy with the plaintiff excluded coverage of charges "incurred on account of pregnancy" other than those in connection with childbirth or miscarriage.

The Court said the surgery was not on account of, but despite, pregnancy. The plaintiff's condition was discovered when she was not pregnant and plans had been made to correct it during a period when she was not pregnant. There was, said the Court, documentary evidence clearly supporting a finding that neither the condition or the corrective surgery could properly be classified as a complication of, or related to, the particular pregnancy. The surgery was not "on account of pregnancy" but because of plaintiff's inability to retain a foetus and her tendency to abort. The flaw in the defendant's position is that it overemphasizes the timing factor; it could not plausibly have made the argument it made here if the operation had been performed a few months earlier when the plaintiff was not pregnant. The exclusion relied on by defendant is not applicable, said the Court, and it is, therefore, liable.

►*Although the referral card given the plaintiff by her dentist indicated only certain teeth were to be extracted, the defendant dentists extracted all of them. Are the defendants relieved from liability because of a "Permit for Operation" signed by the plaintiff after she had received sedation and an anesthetic, if she was not informed that the reverse side of the "Permit" contained a chart indicating that all of her teeth were to be extracted and the defendants never talked to her about which teeth were to be extracted?*◄

This question was before the Court of Appeals of Kansas City,

Missouri in *Moore* vs *Webb,* 345 S.W. (2d) 239 (1961). The plaintiff accepted her dentist's recommendation that her remaining upper teeth be extracted and replaced by a full upper denture and that the two second lower bicuspids be extracted and that she use a partial denture with the eight lower teeth that would be left. He sent the plaintiff to the defendant dentists for the extractions. When she went to the defendants' office, the plaintiff gave the referral card on which her dentist had written "Remove all uppers and both lower second bicuspids" to the receptionist. After her teeth were x-rayed the plaintiff was taken to the operating room where a nurse gave her a "shot." One of the defendants came in and administered sodium pentathol. Shortly thereafter a nurse entered and had plaintiff sign a "Permit for Operation," telling her it was a mere formality. The plaintiff could see lines on the paper but could not read it. On the reverse side of the paper, which was not seen by the plaintiff, there was a chart indicating that all of her teeth were to be extracted. At no time did the defendants or their employees talk to the plaintiff about the x-rays or which teeth were to be removed. While the plaintiff was anesthetized all of her teeth were removed.

The defendants contended that they could not be held liable because plaintiff had signed the "Permit for Operation," which was as follows: "This is to certify that I, the undersigned, consent to the performing of whatever operation may be decided upon to be necessary or advisable, and the use of local or general anesthetic as indicated. I desire to have Extraction or Surgery as shown upon the examination chart above." They argued that the "Permit" was a written instrument which plaintiff should have read and that she is estopped from avoiding it by her failure to do so; in support of this argument defendants relied upon the general law of contracts and cases involving commercial contracts and releases.

The Court said that this case was not to be governed by rules relating to transactions between parties dealing at arms length in the market place but by those relating to a physician's duties and liabilities in performing professional services, which rules are equally applicable to those practicing dentistry, a kindred branch of the healing art. A dentist has the duty of acting, in all of his dealings with a patient, with the utmost good faith. Since a person in ill health is more easily dominated and influenced than one in good health, courts closely scrutinize all transactions

between dentist and patient and, with respect to all contracts between them, the dentist has the burden of proving that the patient entered into it voluntarily and advisedly. The Court said that the circumstances surrounding the transaction negate any idea that plaintiff signed the "Permit" knowingly. She was under the influence of drugs and could not read the document. There is the further fact that defendants withheld all facts from the plaintiff which could have provided the basis of any intelligent consent to extract any more of her teeth than authorized by the referral card. Full disclosure by the dentist is necessary for an informed consent by the patient.◀

Acute Ataxia in Children: Differential Diagnosis

Among the clinical entities in which an unsteady gait is predominant are:

1. Acute cerebellar ataxia. Cause unknown. Most common in children aged 2 to 4. Acute onset of cerebellar symptoms in healthy child without evidence of other neurologic involvement. Normal cerebrospinal fluid findings. Short course with recovery.

2. Peripheral neuritis and neuronitis. Ataxia due to dysfunction of sensory components, mainly those of proprioception. Incoordination increased by removal of visual stimuli. Cause often unknown, may be related to infectious, toxic, metabolic or nutritional disturbance. Electromyography helpful in diagnosis.

3. Multiple sclerosis. Evidence of scattered lesions in central nervous system traceable to separate episodes. When advanced, ataxia both cerebellar and sensory. Perivenous sheathing in retina and increased gamma globulin in cerebrospinal fluid.

4. Cerebellar tumor. Ataxia often "truncal." Onset abrupt or insidious. Manifestations of increased intracranial pressure usually present by time ataxia appears. Ventriculography helpful in diagnosis.

5. Brain stem tumor. Onset usually insidious. Signs and symptoms of increased cranial pressure not common. Involvement of cranial nerve nuclei common.

6. Spinal cord tumor. Gait resembling ataxia but caused by weakness of limbs. Back or root pain, vesical or bowel dysfunction and other signs referrable to lesion of spinal cord.

Aigner, B. R., & Siekert, R. G., *Proc. Staff Meet. Mayo Clin.*, 34:573-581,1960.

The Doctor Builds His Estate

Prepared monthly for the readers of Clinical Medicine by the Research Department of Bache & Co., 36 Wall Street, New York 5.

►*These monthly articles point out one method by which the physician may overcome the handicap imposed upon him by taxes on the bulk of his income at normal rates, as opposed to the capital gains tax open to many business men. One solution is systematic investment of current income in securities.*◄

Investment objectives, while reflecting the desires of a broad cross-section of the population, can usually be grouped into a few large categories. There are the investors seeking yield and gradual appreciation who put their funds into rather staid but well seasoned companies which have proven their worth but in some less-than-dynamic sector of the business community. There are those seeking "growth"—a somewhat encompassing term which, ideally, means a company whose sales and profits accelerate at a pace far above the norm and whose product mix promises a continuation of this trend. There are those who stick to the "blue chips," the giants of industry which may have their ups and downs but can be counted upon to improve as the country's economy improves.

Another category, which is usually ignored, except by a sophisticated segment of investors, are the companies that have shown promise but are still too young to have gained wide acceptance. They are universally young companies with fresh and imaginative management and are capable of becoming the giants of the future. Thus, a correctly timed investment in these stocks can eventually mean large profits when the company's success becomes more widely known. Of course, while the rewards can be great, so too are the risks, for many a company has displayed early promise but fallen to the wayside to the chagrin of a once-confident stockholder.

We have selected three companies which we feel can make a real name for themselves, in time. They are already fairly well established in their own niche, and if projections work out correctly, investors with faith and patience can be very well rewarded.

PneumoDynamics

Our first stock for perusal is PneumoDynamics. The company, incorporated in 1959, was inactive until September 30, 1960, when it acquired four divisions and a subsidiary of Cleveland Pneumatic Industries, a privately-owned company, in exchange for stock, equal to 68% of the subsequent capitalization. The balance, 32%, was sold to the public at $9.00 per share to provide working capital and retire debt.

PneumoDynamics is primarily a defense contractor with more than 80% of its revenues derived from government sources. The company is presently engaged in the development and production of hydraulic, pneumatic, and hot-gas actuating systems for missiles and aircraft, electrohydraulic and electropneumatic servo systems for both military and commercial aircraft, aerospace and submarine control instrumentation for Polaris-launching submarines, temperature sensing devices and directional gyroscopes for the Navy. End products are used in such diversified programs as Grumman's W2F airplane, Martin's Bullpup missile, North American's B-70 bomber, Convair's 880 and 600 commercial jets, General Electric's J-79 jet engine, and the Hughes Falcon missile.

PneumoDynamics currently is in a period of rapid growth, reflecting acceleration in the demand for its present products. The recent increased emphasis in military expenditures improves an already excellent position, as the Republic F-105 jet, the C-130 cargo plane, and the Polaris program are all of considerable importance.

On a longer-range basis, the following projects have considerable potential:

1. For the B-70, the company has important components and, in addition, is developing an advanced automatic brake control system which employs special purpose miniaturized analogue and digital computers and sensors. This system adjusts brake pressures 25 times a second to maximize braking force and eliminate skid.

2. It is expected that the company will obtain a contract for the lunar landing gear for a vehicle which is expected to make a soft landing on the moon.

3. Project Artemis, which is for

The Milibis® vaginal suppository is soft and pliant as a tampon. It offers proved therapeutic action* in an exceptional vehicle. The suppository is clean, odorless and non-staining. The course of treatment of vaginitis (trichomonal, bacterial and monilial) with Milibis is short —only 10 suppositories in most cases. Milibis® vaginal suppositories are supplied in boxes of 10 with applicator.

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PNEUMODYNAMICS			
Price	26	Capitalization (6/30/61)	
Dividend	None	Long Term Debt	$1,650,400
Yield	None	Common Stock	550,000 shs.
		Warrants	60,000
		Options	30,000

the underwater detection of submarines, could be of tremendous long term potential. This project is at an experimental stage and, if successful, could lead to significant hardware contracts in a few years. The present incipient stage already includes some hardware.

During the first nine months of the 12-month period ended November 30, 1960, pro forma operations of the four divisions and subsidiary acquired in September, 1960, resulted in losses, reflecting military cutbacks and extraordinary costs in establishing three development and engineering divisions. During the fourth quarter, however, profitable operations commenced and earnings were of sufficient magnitude to overcome previous pro forma losses. Net income totaled 16¢ per share on sales of nearly $14 million. In the current period, earnings have risen significantly in each successive quarter. For the year to end November 30, 1961, we believe that sales could approach $18 million with net income of $1.60 to $1.75 per share. For the following fiscal year the company should continue to show improvement in sales and moderate gains in margins. While it is somewhat premature to project fiscal 1962, we believe that sales could approach $20 million and net income exceed $1.75 per share.

At approximately 15 times estimated 1961 earnings, we believe these shares are undervalued in view of the outlook for further sales and earnings gains.

Giant Food, Inc.

Our second company is Giant Food, Inc., which occupies an unusually strong competitive position in the supermarket field in Washington, D. C., and adjacent areas of Virginia and Maryland. The company's historical performance within its industry has been well above average and this fact coupled with management's newest plans lead us to believe that future results will at least parallel the favorable results of the past.

Using 1952-4 as a base period,

Giant Food's revenues have climbed from around $51 million to a record level of $146.7 million in the fiscal year ended April 29, 1961. Earnings per share have increased proportionately from an average of 52¢ per share in the base period to a new high of $1.46 per share in the latest fiscal year. Both sales and earnings have increased at a compounded rate of approximately 16% per year. Equally important, if not more so, is the fact that Giant Food has been able to continue its excellent performance in the last 3-4 years, a period of greatly heightened competition within the industry. In the past three years, both revenues and net income jumped by over 40%, an achievement which can be claimed by only a small minority within the supermarket group.

Part of the explanation of these gratifying results is the fact that Giant Food's management has consistently remained one or two steps ahead of the rest of the industry in operational planning. Giant Food, in its earliest years, was building self-service supermarkets when the rest of the industry was still operating out of small, service units. When the rest of the industry went to 5000 square-foot self-service stores, Giant Food built 10,000 square-foot units with increased variety and superior display. When competition moved to 10,000 square-

foot stores, Giant Food started building 20,000 square-foot stores and so on. Today a typical company food store embraces about 30,000 total square feet and several, with large selling areas for non-foods, embrace 45,000 square feet. On the average, Giant Food supermarkets produce sales of around $2,700,000 annually with many of the newest units, of course, achieving results well in excess of this amount. Most important, Giant Food's consistent early anticipation of major trends has enabled it to gain a strong number two position in its area, second only to the longer-established Safeway chain.

Looking ahead, we now expect Giant Food to participate fully in the retail industry's newest major revolution—i.e., merchandising both foods and non-foods on a self-service, mass-volume basis under one roof. Once again, Giant Food's management was among the nation's earliest in anticipating this new trend. Merchandising non-foods has been part of Giant Food's operation for many years and, since 1958, has been adopted on a broader scale through construction of stores aggregating 45,000 square feet or more with around 50% of the space devoted to general merchandise.

Giant Food's plans for expansion into general merchandise will grow bolder. With 3-4 years experience behind them, Giant Food has a good jump on potential competition since it has already made its inevitable early mistakes and, at the same time, can better pinpoint areas of strength. In addition, the company has built up a solid organization in general merchandise and is now fully prepared to move ahead intelligently. In 1961, the company will open its first large discount store unit of 80,000 square feet with 60,000 square feet devoted to general merchandise and 20,000 to food. Next year a "Super Giant Discount Store" of 100,000 square feet is planned. The main body of these stores will be divided into the general areas of food, housewares, family apparel, and shoes. Adjacent to the main unit will be a large service area which will contain a coin-operated laundromat and dry cleaner, a drug store, shoe repair store, automobile wash, and auto service center. This new prototype will be very attractively designed in order to appeal to the suburban middle-class population which dominates the area.

We further believe the company will carry several other valuable advantages with it in its large-scale move into general merchandise. These are as follows:

1. Giant Food has a strong

GIANT FOOD, INC.

Price	30	Capitalization (4/29/61)	
Dividend	$0.40	Long Term Debt	$6,000,000
Yield	1.32%	5% Preferred Stock	
Traded	A.S.E.	$100 par	196,500
		Common Stock	1,281,388 shs.

position in its trading area in terms of consumer acceptance; thus, the buying public should more readily respond to Giant Food than it would to newcomers to the area or to other food chains with weaker trade positions.

2. Chief competitors currently operating in the area (quite successfully) are run primarily on a leased-department basis.

3. We believe it will be easier for a supermarket chain to move into large-scale, low-markup merchandising of general merchandise than it will be for conventional dry goods retailers because the supermarket operator invented the concept of self-service, low-markup, high inventory turnover, and high return on invested capital.

However, while much of our discussion has dwelled upon Giant Food's move into general merchandise, we must also mention the fact that the company is not going to abandon its conventional supermarket in terms of future expansion. These are still the heart of the company's success and earning power to date. Indeed, about nine more supermarkets in the 30,000 square-foot range are scheduled for opening in fiscal 1962, bringing the total number of stores by year-end up to around 65.

Currently, Giant Food is selling at about 20 times 1961 earnings of $1.47 per share and 11.2 times total cash earnings of $2.68 per share. For fiscal 1962, we estimate sales of about $160-$165 million and earnings of $1.60-$1.70 per share with cash earnings near $3.00 per share. Thus, the shares are selling at about 18 times estimated 1962 net income and about 10 times estimated cash flow.

Considering its fine record, Giant Food appears underpriced. The better regional food chains such as Borman's, Food Giant, Stop and Shop, and Winn-Dixie all command price-earnings multiples in the 20-30 area. The better national chains with comparable records of performance such as Grand Union and Food Fair currently sell above 20 times earnings as well. Giant Food's

earnings per share performance is superior to the latter two issues and the company's future prospects, we believe, compare favorably.

National Video

The shares of National Video, representing a conservative but fast-growing company in consumer electronics, are attractively priced for long-term investors. Although the television set industry has faced intensely competitive times for the past decade, National Video has established a strong trade position and for the fifth consecutive year has shown impressive earnings and sales gains. This outstanding performance reflects relative immunity to the extreme competitive pressures in the industry. In the future, this favorable trend should accelerate as NVD's competitive advantages become more apparent with a foreseeable increase in the demand for its products and the addition of new products as well.

National Video began operations in 1949 with the manufacture of cathode ray tubes (picture tubes) for sale to television set manufacturers. The timing initially seemed fortuitous with television taking hold. Within the space of a decade television had completely saturated American homes. Unfortunately, National Video was not the only company which began to manufacture cathode ray tubes. In 1952, more than 25 firms were producing these tubes. During 1953-1957 a very intense period of competition prevailed, and competition was so severe that by 1957 only nine manufacturers remained.

The pendulum which swung from shortage to excessive supply now is swinging back to shortage with National Video a major beneficiary.

We estimate the annual productive capacity of the industry approaches eleven million per year. This is not significantly greater than the 9½ million picture tubes produced during 1960. Moreover, the future demand for picture tubes appears quite promising. During 1960, which cannot be considered a particularly good year since output was the third lowest of the past eleven years, 5,700,000 sets were produced. Currently, there are about 55 million sets in use. Assuming an average life of seven years the annual replacement market approximates eight million sets. Thus, 1960 set production was only two thirds of the estimated replacement market for sets.

The life of the picture tube is considered below that of the television set and the annual replacement market for tubes approximates 6½ to 7 million tubes.

The replacement market, however, is serviced to a considerable degree by re-builders which re-build the old cathode ray tubes. These re-builders are relatively small operators who compete vigorously. While they currently account for about 50% of the tube replacements, their future seems less promising due to the greater complexity of new tubes and the decline in prices of new tubes over the years.

During 1960, 9½ million tubes were produced with about 3½ million tubes for replacements and about 6 million for new sets. In the next 2-3 years, television set production should rise to about 8 million which, with the replacement market for old tubes to about 60% of 8 million, would provide a combined demand for 13 million tubes, about 20% over present capacity.

In addition to the favorable outlook for television tubes generally, National Video is in a particularly strong position due to its location in Chicago. All the major television set manufacturers have their plants located in the midwestern states. A picture tube sells for around $20 per tube. The transportation of these tubes is quite expensive reflecting their bulk. As a result, an eastern manufacturer to ship to the Midwest would have to absorb about $1.00 per tube which represents about 5% of the sales

price, a very high ratio.

During 1960, TV set production began at a high rate and considerable optimism prevailed. Then in the late spring of 1960, set sales slumped and the industry suddenly was unable to maintain its high rate of earlier production. The year which at one time seemed to have more promise than 1959 actually ended with a decline of about 10%. The changes in optimism and sales were felt more severely in production as manufacturers strove to keep inventories in good shape. During such contraction periods, cost reduction plans also are emphasized. The combination of these two factors led to considerable pressure on components and picture tubes were not immune since capacity was about 15% in excess of the annual demand and 40% in excess when competition was greatest. Accordingly, prices suffered and have not yet snapped back.

National Video is the third largest domestic manufacturer of television tubes. Its largest customers are Admiral and Motorola which have a major stake in the television set market. Columbia Broadcasting System's International Division has assumed the role of a major customer for the export market. Also, the sales to CBS have increased steadily and provided stability. In fiscal 1962 sales could increase by another 30%. Since some of the eastern tube producers may give up the fight as they are becoming increasingly less competitive, National Video's already strong competitive position should become even stronger.

During calendar 1960, National Video had its first year when more than one million tubes were produced. This year production should exceed that of 1960. More important, however, is the likelihood that industry tube capacity could shortly be insufficient to meet demand. National Video can produce with its present highly automated facilities in excess of 1½ million tubes annually. Moreover, the company has additional land adjoining the modern plant. At relatively low cost, facilities could be increased rapidly and significantly.

The experience over the past decade gained by National Video suggests that this company, now the principal independent producer of picture tubes, could become the largest. Its facilities permit exceedingly low-cost manufacturing, are very modern and geared to mass production. Of the major producers, National Video is the only one which is not in the end-product. Obviously, end-product manufacturers would prefer to purchase from National Video than from a com-

petitor.

This strong competitive position suggests that when the industry capacity starts moving from surplus to shortage National Video will be in a position to increase sales materially. When picture tube prices move up as it is likely, then profit margins will show even more significant improvement.

For the fiscal year ended May 31, 1961, despite the sharp reduction in sets manufactured, sales for National Video increased to nearly $19 million from $17 million in the preceding year. At the same time net earnings were $2.06 per share compared with $1.84 in the preceding year. The decline in sets manufactured began just as NVD's fiscal 1961 commenced, thus the improvement is even more impressive.

We believe that the number of television sets to be manufactured during the 1962 fiscal year will increase. Industry-wide retail sales figures are already indicating a better year. With new accounts added, sales for National Video should increase by at least 10% to about $20 million per year. Earnings, too, should improve and we believe that $2.25 per share is a conservative estimate. If television set sales continue to pick up, we believe sales volume could approximate $23-$25 million. At that level net income should range from about $2.50 to $3.00 per share. In future periods based on present capacity, earnings of about $3.00-$4.00 per share are foreseeable based on capacity operations which can support sales in excess of $30 million. Moreover, facilities could be readily expanded when the demand for tubes requires this move, leading to higher earnings.

So far, the sale of color television sets by the industry has been negligible with the brunt born by RCA. This year several leaders began to offer color television sets. We believe the new entrants are only giving limited emphasis to color sets. The time when color television becomes a factor cannot be predicted, but progress has been very slow. National Video does not yet have any plans to begin to manufacture color tubes, but pilot line production has already occurred. National Video will be in the position to rapidly begin to manufacture, once industry sales are large enough to justify their production. In the meantime, the present tube supplier probably is absorbing a loss on every tube sold.

Management of National Video now believes that it is propitious to move into new product areas. One area is the lucrative military market and a program to obtain military contracts has begun.

NATIONAL VIDEO

Price	34(1)	Capitalization (5/31/61)	
Dividend	$1.00(2,3)	Long-Term Debt	$417,000
Yield	2.9%	Class "A" ($1 par)	283,307 shs.(4)
Traded	A.S.E.	Class "B" ($1 par)	338,360 shs.

(1) Stockholders have approved 2-1 split.
(2) Indicated Rate.
(3) Less tax withheld (20% Puerto Rican non-residence tax).
(4) On December 23, 1959, Bache & Co. headed a group of underwriters offering 283,307 Class "A" shares at $15 a share.

NOTE: A partner of Bache & Co. is a director of National Video.

Initially, contracts would be for research and then production. The know-how of National Video would place the company in a position to go into the microwave tube and test instrument fields. The research organization has already begun to be expanded slowly with acceleration anticipated once government contracts begin to be awarded to National Video.

National Video's tax position is somewhat different from that of other American companies. Several years ago, a Puerto Rican company, Rico Electronics, was established. Ownership of National Video stock also includes a trust certificate in Rico which does not pay taxes on earnings until 1963, at which time a rate considerably less than the American corporate tax rate commences. This affiliate manufactures the guns for NVD's picture tubes. Although the tax saving becomes less in 1963, a new Puerto Rican organization with a ten-year tax exemption has been established. Both organizations will manufacture "guns" in the future. Combined, the net effect on tax will be small. During the decade of the 1960's, we believe that no more than 15% to 20% of the Puerto Rican earnings will be paid in taxes compared with the domestic rate of 52%.

The shares of National Video, in our opinion, represent the most conservative way of participating in the consumer electronics industry since the company due to present industry conditions is not plagued with excessive overcapacity or the dependence upon the success of one particular line or even several lines of TV sets. Rather, National Video is dependent upon overall sales of TV sets and the replacement market for tubes.◀

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Lanesta Gel has complete esthetic acceptance and is well tolerated.

*Gamble, C.J.: Am. Pract. & Digest. Treat. *11*:852 (Oct.) 1960. See also Berberian, D.A., and Slighter, R.G.: J.A.M.A. *168*:2257 (Dec. 27) 1958; Kaufman, S.A.: Obst. and Gynec. *15*:401 (March) 1960; Warner, M.P.: J.Am.M. Women's A. *14*:412 (May) 1959.

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The Doctor and His Federal Income Tax

Prepared monthly for the readers of Clinical Medicine by Sydney Prerau, Director, the J. K. Lasser Tax Institute, Larchmont, New York

►*Real estate investments*◄

Skyscrapers, motels, hotels, shopping centers and housing developments yield substantial returns to their owners, but few doctors have or can raise, as individuals, the amount required to finance the purchase of such a project. Yet in the past decade, thousands of doctors, as well as other professional and business men have become such owners by pooling and investing their money in real estate syndicates or limited partnerships.

Today syndicates hold real estate with a total value of over $10 billion. Despite its widespread use, the syndicate method of large-scale real estate investments is now being replaced or modified. Tax law changes and shortcomings of this form have caused real estate operators to revise their methods of operation.

In 1960, Congress approved the investment trust as a method of avoiding corporate tax in large-scale real estate investments. And even before this, several large syndicates had begun to convert to corporations. At present, it is too early to predict whether the previous trend to corporate operations will be replaced by a trend towards investment trusts.

The phenomenal rise of syndicate operations was caused not only by its effect on the investment value of real estate, but also by the tax shelter offered by syndicates operating as limited partnerships. The limited partnership, as a separate entity distinct from the general and limited partners, is *not* taxed. Taxes are imposed only on the individual shares of income received by each partner. Often little or no tax is incurred by the investors at the start of the syndicate's operations, because depreciation deductions on the property of the syndicate re-

duces the taxable income. The deductions are passed on to the investors without reducing the amount of cash available to them. However, the extent of this tax savings is limited by the terms and the amount of the mortgage debt on the syndicate's property. Mortgage amortization payments reduce the amount of cash income available to investors without an offsetting tax deduction. Thus, in the final analysis, the amount of an investor's tax-free return depends on the extent to which the depreciation deductions exceed the amortization payments.

To provide a higher return of tax-free income, at least during the early years of its operations, a syndicate must obtain a constant payment mortgage. This provides for the payment of fixed annual amounts to which are allocated continually decreasing amounts of interest and increasing amounts of amortization payments. Thus in the early years a tax-free return of syndicate income may be high at the same time as the amortization payments are low. But as the amortization payments increase, nontaxable income will decrease. When this tax-free return has been substantially reduced, a syndicate usually attempts to refinance the mortgage in order to reduce the amortization payments and once again increase the tax-free return. Examples are as follows:

1. Dr. A invests in a syndicate of 100 investors which owns an office building that returns an annual income of $100,000, after deduction of operating expenses, but before deduction of depreciation of $80,000. Thus the syndicate's taxable income is $20,000 ($100,000-80,000). Assuming that there is no mortgage on the building, all of the $100,000 is available for distribution. (Since the depreciation deduction requires no cash outlay, it does not reduce the cash distribution). Dr. A receives $1,000. The syndicate's taxable income being $20,000, only 20% ($20,000/$100,000) of the distribution is taxable. Thus, he reports as income only $200 of his $1,000 distribution; $800 is tax-free.

2. Same facts as above, except that the building is mortgaged, and an annual amortization payment of $40,000 is being made. Consequently, only $60,000 is available for distribution, of which $20,000 is taxable. Dr. A receives $600, of which one-third ($20,000 / $60,000) or $200 is taxed, and $400 is tax-free. In other words, the $60,000 distribution is tax-free to the same extent as that by which the depreciation of $80,000 exceeds the amortization of $40,000—namely, $40,000. If the amortization payments were increased to $50,000,

only $30,000 of the distribution would be tax-free ($80,000-$50,000).

The tax-free return is based on the assumption that the building does not actually depreciate at a rate as fast as the tax depreciation rate. Assume a doctor-investor makes an investment in a syndicate which for tax purposes is allowed to take depreciation at a rate of 5% a year. If the building is actually depreciating physically at a rate of 5% a year, the so-called tax-free return on investment does not exist. Distributions to investors (over and above current income return) which are labeled tax-free distributions are in fact a return of the investor's own capital.

Although limited partnerships are organized to prevent double taxes, there is always the danger that the partnership may be taxed as a corporation, because its methods of operation are similar to those of a corporation. This threat plagued syndicates for years, because of the lack of clear-cut court decisions and Treasury rulings on the question of when a syndicate was a partnership and when it was a corporation. Recently, the Treasury filled this gap with regulations which bring some certainty to the field. But the uncertain tax consequences of syndicate operations do not alone explain the present trend away from the limited partnership. Syndicate operations do not provide for the diversification of investments, or for the free transfer of the investors' individual interests. A syndicate is generally tied to one particular real estate holding, whereas a corporation or trust can be organized to hold more than one property. Investors (the limited partners) have found it difficult to sell their interests in the syndicates because no such open market exists for the sale of their interests as exists for the sale of corporate stock. Often,

syndicate investors have had to sell at a discount.

These disadvantages, however, do not mean that a small group of investors cannot find the limited partnership a satisfactory form of pooling their investment in a particular piece of property. They may have no other alternative. A limited number of investors cannot use the investment trust, because there must be at least 100 participants in such a venture. And the use of the corporation runs the risk of the double tax, whenever the corporation has taxable income over and above depreciation or leasehold amortization deduction. Treasury tests have been prescribed and double tax can be avoided when such tests are met in both organization and operation.

►*Extensive real estate activities sacrifice capital gains for doctor*◄

Investing in real estate is found by many busy practitioners to be a fine source of additional income. Generally, to the doctor the real estate is a capital asset, producing capital gain. But where the real estate can be considered by the Treasury as being held primarily for sale to customers in the ordinary course of business, gain is treated as ordinary income. One doctor whose real estate activities were so extensive that the Treasury held he was in that business had his gains taxed as ordinary income. The Treasury claimed $19,231 and $168,812 as additional taxes for the years 1955 and 1956.

Dr. A was a busy doctor practicing for 35 years in a suburb of Cincinnati, and associated with nine other doctors as senior member of their association. He is on the staff of five hospitals and active in many public service and charitable organizations related to the practice of medicine. In 1945 he bought three lots in Florida intending to build a home on one. In 1949 he bought another. Beginning with 1951 he bought numerous properties in Florida and California, either alone or in joint ventures with others and as a member of various syndicates. Over a nine year period he was instrumental in the formation of 13 real estate syndicates; he made numerous and frequent sales. He purchased new properties as others were sold and in some instances he sold to finance new purchases. He listed properties with brokers, arranged for brokers to advertise, sold parts of large tracts, and engaged in extensive correspondence with brokers to promote sales. He used the services of an accountant to assist him in keeping books and records relating to the properties and in

the preparation of annual reports to syndicate members.

His income from the practice of medicine in 1955 was $29,701 and $33,433 in 1956. His income in the same years from sales of real estate was $72,306 and $284,406, respectively. The doctor contended his gains from these years were capital gains, that he did not hold any of the properties for sale to customers and that he was not engaged in the business of selling real estate. The Treasury determined that his properties were held primarily for sale to customers in the ordinary course of the real estate business. The Tax Court affirms the Treasury's determination. This doctor, says the Court, was a busy and successful doctor, but as a taxpayer can be in more than one business, he was in the business of buying and selling real estate, too. During the two years he purchased properties for the purpose of selling at the highest price, so that he was a dealer in real estate. His profits from the real estate are taxable as ordinary income.

►*Doctor's business auto expenses partly personal*◄

Although the tax laws recognize the necessity of a doctor's ownership of a business automobile, he is not permitted to deduct for use of the auto for purposes other than those ordinary and necessary to medical doctors. If he uses his car, even at a minimum, for personal engagements or purposes, he should keep clear records upon which an allocation can be made. Otherwise the Treasury and Tax Court will bear heavily against him in making an allocation because the inexactitude is of his making.

Dr. A was a general practitioner and surgeon in Georgia. He treated patients at his office daily during office hours, at their homes and at the hospitals. He considered one of his two cars his business auto. This car he used to get to and from his home mornings and evenings, for going home for lunch two days a week, for after office-hour calls, to go to patients' homes, to the hospitals, for managing some business property, for trips to medical meetings and conventions and to go to and from social engagements.

His primary purpose in using the business auto for social engagements was to have it available on emergency calls. He kept no records of the use of this car. He deducted all his expenses for the use of this car, and took depreciation on it on the theory that even when he used it for personal reasons he was nonetheless always on call, and so it

was being used for business purposes at all times.

The Court does not agree with him. It says his trips to social clubs, to his home for lunch and to the hospital where he has the major part of his practice are at least in part personal, even though he had to have his car available at all times and its use was primarily necessitated by business reasons. When he used his car on social engagements a second purpose existed—his personal enjoyment.

Since the doctor did not present a lucid picture of the ratio of emergency calls while on social engagements to the total number of social engagements, or as to whether his wife was with him on such social engagements, the Court allowed him only 75% of the claimed expenses as deductible business expenses for two of the years in question, and 85% for the third year.

►*Your Social Security tax for domestics*◄

Is your wife one of the more than 100,000 housewives who—according to official estimates—may be violating the law by not reporting wages they pay household help? Her violation may be due to her ignorance or misunderstanding of when Social Security taxes are to be paid on household wages. Or perhaps the domestic has balked at taxes being withheld on her pay and your wife has agreed not to report the domestic's pay.

Penalties for Failure to Comply with Law

Whatever the reason for your wife's failure to report and pay Social Security taxes on domestic wages, she is subject to interest and penalty charges. Ignorance of the law is no excuse and she has no defense in claiming the domestic refused to have taxes withheld on her pay. Domestics can be fickle. When working they may not want taxes withheld. But when they retire they will apply for Social Security benefits. A check of their records will reveal that your wife has failed to pay and withhold taxes on their wages. At that time, she will have to pay not only the tax due but also interest and penalties. If the time lapse covers many years, interest and penalty charges can be substantial and considerably more than the original tax owed. Interest accrues at 6% a year. The penalty for wilful failure to pay the tax is an amount equal to the tax owed. The penalty for failure to file the return reporting the tax is 5% for each month of delay, up to 25%. The penalty for not depositing the tax with the Government is 1% for each

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month of delay up to 6%. And if failure to pay the tax or make the return, keep records or supply the information required is wilful, a fine may be imposed up to $10,000, with imprisonment up to one year, or both, plus costs of prosecution. Purpose of the tax is to provide social security coverage for domestic help.

Domestics Subject to Tax

Maids, cleaning help, and baby sitters are the more usual domestic occupations subject to tax. The tax also applies to cooks, butlers, housekeepers, governesses, valets, laundresses, caretakers, handymen, gardeners, footmen, grooms, and chauffeurs of automobiles for family use.

What about gardeners, carpenters, painters, plumbers and repairmen you hire to work around the house? No tax is due on their pay as long as they work for you as independent contractors. Domestic services performed by parents or by children under 21 are also not covered.

$50-a-Quarter Test

Paying a domestic as little as $4 a week subjects the domestic to Social Security tax. You must withhold 3% of her wages and add from your funds another 3% (a total of 6%). The test is: If you pay a domestic $50 or more cash wages in a calendar quarter, social security tax applies to such cash wages. The $50 a quarter test applies separately to each domestic you employ.

The tax applies only to the cash wages. You do not include as wages the value of food, lodging, clothing, car tokens, and other noncash items which you give a domestic. If you pay a domestic more than $4,800 durinv a year, the tax applies only to the first $4,800 of wages.

Examples

1. You pay a baby sitter several times during the months of July, August and September. The payments add up to $45. No tax is due. The $50 a quarter test has not been met.

2. Your wife hires cleaning women by the day. During the quarter she pays one of them $22, another $74, and still another $10. She pays taxes on the $74 because the $50 a quarter test has been met for this employee. No taxes are due on the other payments.

3. A maid works for you in January, February, and until March 15, when she quits. She has earned $125 during these months and you pay her $40 in March and the balance of $85 in April. No tax is due for first quarter on the $40 paid in March. However, you must pay tax for the second quarter on the $85 paid in April since the $50 a

quarter test is met in that quarter.

When to Withhold

You should withhold the 3% tax from each payment of cash wages, if you expect to meet the $50 a quarter test. If you are not certain the $50 a quarter test will be met, you may withhold the tax until you are sure the test will be met. If you want to pay the tax without withholding it from the domestic's wages, you may do so.

When to File

You use Form 942 the "Employer's Quarterly Tax Return for Household Employees (For Social Security)" to report the Social Security tax due. Near the end of each calendar quarter, the District Director will mail a Form 942 to you if you are on his mailing list. If you are not on the mailing list, ask the District Director for Form 942 and advise him of your name and address to be added to his mailing list.

The calendar quarters of the year and the last day for filing a return for each quarter are shown in Table 1.

Form 942 should be accompanied with a check in the amount of the tax due.

Final Statements

In addition to filing quarterly returns, you have to furnish to each domestic a written statement of wages and employee tax for each calendar year, on or before January 31 of the next year. If a domestic's employment ends before December 31, you should cover the part of the year through the last day of employment, and should furnish it within 30 days after the day on which the last payment of wages is made to the employee.

Each written statement should show (a) the employer's name and address, (b) the employee's name, address, and social security account number, (c) the total amount of wages paid in the year (or part year), and (4) the

TABLE 1

FILING FORM 942

MONTHS IN QUARTER	QUARTER ENDING	RETURN DUE
January, February, March	March 31	April 30
April, May, June	June 30	July 31
July, August, September	September 30	October 31
October, November, December	December 31	January 31

total amount of employee tax deducted, if any.

The written statement may be in any form suitable for you to keep. Instead of using your own statement, you can use Form SS-14 which is supplied by the District Director. But you do not have to file Form 1096 and 1099 nor give the domestic Form W-2 as you do with other employees.

FINAL WORD OF ADVICE

1. Make a written record of the employee's name and social security account number. This information should be copied from the employee's social security account number card. Also record the employee's home address. If an employee has no account number, he should get one by filling in Form SS-5 ("Application for Social Security Account Number"). This form may be obtained from the nearest district office of the Social Security Administration, from the post office or the District Director.

2. Keep a record of the dates and amounts of cash wages payments and tax deducted. You can keep the records in any form you wish.

►*Doctor's "business" activities furnish no basis for bad debt deduction*◄

Unquestionably, a physician has the right to engage in businesses in addition to his practice of medicine, and many do. But engaging in an additional business does not mean that a bad debt connected with such business may be treated as a business bad debt deductible from ordinary income, when otherwise it would be a nonbusiness bad debt.

The Internal Revenue Code defines a business bad debt as one created or acquired in connection with a taxpayer's trade or business. A business bad debt may be deducted in full as an ordinary deduction. A nonbusiness bad debt can only be deducted as a short-term capital loss. This is a limited deduction,

in

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Conway, J., and Lauwers, P.: Circulation 21:21, January, 1960.

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deductible only against capital gains plus $1,000 of other income, but with a carryover to the next five years.

One doctor paid $19,000 in settlement of his personal liability on loans he guaranteed for the company in which he was interested, and deducted the amount as a business bad debt from ordinary income. The Treasury disallowed the deduction and assessed a deficiency of over $6,000. The Tax Court agrees, holding the amount a nonbusiness bad debt. Here are the facts:

Dr. A practiced medicine for many years in Mississippi. In 1949 he developed symptoms of Burgher's disease, and was advised to stop his surgical and obstetrical practice and take it easy. He curtailed his practice, but his receipts from it were from $25,000 to $33,000 for the years from 1953 to 1958. After followup examinations, he decided in 1951 to get into some business for the security of his family should the progression of the disease incapacitate him. He contemplated going into various businesses with his brothers, and went so far as to buy a Diesel motor to go into the boat building business—but none of these plans materialized. In 1950 he became the owner of a drug store and building on liquidation of a former partnership, and he and his wife have been operating the drug store to date. He has his office and clinic in the building and collects rents from it. Through his auditor he got to know Mr. B, and loaned him $5,000 to buy out an interest in an automobile agency. A corporation was then organized to operate the agency, with Mr. B, and the doctor and his family acquired a controlling stock interest. Business did not prosper. The doctor signed a guarantee for a corporate loan and endorsed corporate notes. In 1956 the company became insolvent. The doctor settled his guarantees by payments of over $19,000 to creditors. The doctor took a deduction of the $19,000 in 1956 as a business bad debt against his income. The Treasury determined that the payment resulted from a nonbusiness bad debt and constituted a short-term capital loss.

The Tax Court affirms the Treasury's determination. Dr. A was engaged in businesses other than his medical practice, namely the drug store and building operation, but these had no relation to the automobile agency business or to the guarantee of its obligations. The loans to Mr. B and the automobile company do not constitute his engagement in the business of lending money. Acquiring stock in the auto agency was an investment, but

this does not put the doctor in the business of making investments. He was not to be paid for guaranteeing corporate obligations, and can't be said to be in the business of guaranteeing notes. The guarantees the doctor made were accommodation liabilities he assumed because of his interest in the auto company. The $19,000 represents only a personal, nonbusiness bad debt.◀

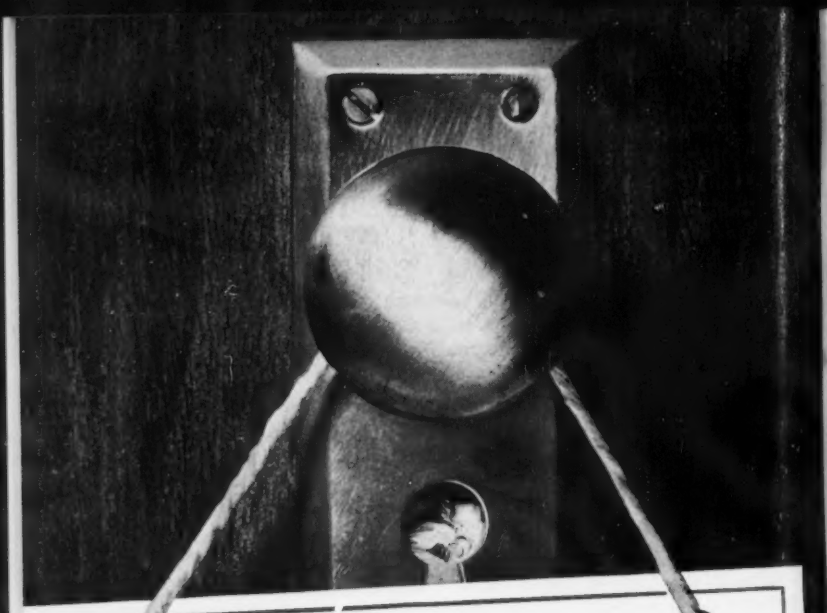
Recurrent Pancreatitis: Treatment by Transduodenal Sphincterotomy and Exploration of Pancreatic Duct

The 2 most accepted theories of the cause of pancreatitis are those of obstruction to outflow of the pancreatic secretions from the duct system, and reflux from the common duct into the pancreatic duct through a "common channel" formed by the entrance of the duct of Wirsung into the common bile duct proximal to the papilla of Vater.

Recurrent acute attacks present a clear clinical picture supported by appropriate alterations in serum amylase, lipase and trypsin levels. In others the situation is far more confusing, particularly in cases in which the symptoms, although disabling, are less severe and frequently atypical. Patients with recurrent bouts of pain in the upper abdomen in whom lesions of the upper gastrointestinal tract, biliary system and kidneys are excluded by appropriate x-ray examination must be viewed with grave suspicion. All patients with acute cholecystitis or biliary colic must also be considered candidates for an accompanying pancreatitis.

Sphincterotomy and transduodenal exploration of the pancreatic duct was carried out in 53 patients with recurrent pancreatitis. Recently, pancreatography has been added as a standard part of the procedure. Of these, 32 patients obtained good, 9 fair, and 12 poor results. Seven patients with poor results have had further surgical procedures resulting in 5 good, one fair, and one poor result.

Bartlett, M. K., & Nardi, G. L., *New England J. Med.*, 262:643-648,1960.



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Each wafer contains 2.5 mg. dicyclomine hydrochloride, 100.0 mg. magnesium oxide (hydrated), 240.0 mg. aluminum hydroxide, dried gel, 90.0 mg. magnesium trisilicate, 12.5 mg. sodium lauryl sulfate, and 50.0 mg. methylcellulose. *Indications:* Oral treatment of peptic ulcer and relief of symptoms caused by gastric hyperacidity with or without a tendency toward pylorospasm. *Dosage:* To be individualized according to patient requirements and response. *Supplied:* In boxes of 96 wafers in plain strips of four.

►Clusivol Chew Tablets *(Ayerst)*

Multiple vitamin-mineral tablets intended particularly for children. *Indications:* When nutritional reinforcement with essential vitamins and minerals may be required. *Dosage:* One chewable tablet daily. *Supplied:* In bottles containing 50 tablets.

►Dimocillin *(Squibb)*

Each vial provides 1 Gm. of sodium dimethoxyphenyl penicillin. *Indications:* For the treatment of infections caused by resistant staphylococci. *Dosage:* To be individualized. *Supplied:* In individual vials, each containing 1 Gm. of sodium dimethoxyphenyl penicillin.

►Geriliquid *(Lakeside)*

New package size. Now available in bottles containing 16 ounces of liquid — niacin and glycine in a wine base. *Indications:* Vasodilating agent for the sustained relief of cold hands and feet, pain, and other conditions due to poor peripheral circulation. *Dosage:* To be individualized. *Supplied:* New package size, 16 ounce bottles.

for topical therapy
of certain types of
GLAUCOMA...

Normal visual field

Beginning contraction of visual field

Advanced contraction of visual fie

..two highly effective miotics

HUMORSOL®

Demecarium Bromide

- potent, longer-acting than other miotics
- two instillations weekly are often sufficient to control glaucoma- because it is unusually potent, it may be uniquely useful in breaking up peripheral synechiae- aqueous—isotonic with conjunctival fluid stable—refrigeration not required- 0.25% ophthalmic solution, in 5-cc. bottle with dropper

FLOROPRYL®

Isoflurophate U.S.P.

- long-acting—in glaucoma, one instillation daily is often sufficient; (in strabismus, one instillation every two days to one week)- may be effective when other agents fail- two topical dosage forms—0.1% ophthalmic solution in anhydrous peanut oil, in 5-cc. bottle with dropper; 0.025% ophthalmic ointment, in 3.5 Gm. tubes

also available: DARANIDE® Dichlorphenamide — for oral control of intraocular pressure, 50-mg. tablets

Before prescribing or administering HUMORSOL, FLOROPRYL and DARANIDE, the physician should consult the detailed information on use accompanying the package or available on request.

MSD MERCK SHARP & DOHME, DIVISION OF MERCK & CO., INC., WEST POINT, PA.

►Dactilase Tablets *(Lakeside)*

Each tablet contains 50 mg. piperidolate hydrochloride, 2 mg. standardized cellulolytic enzyme, 15 mg. standardized amylolytic enzyme, 10 mg. standardized proteolytic enzyme, 100 mg. pancreatin 3X (equal in activity to 300 mg. pancreatin N.F.) and 15 mg. taurocholic acid. *Indications:* Gastrointestinal disorders in which pain, spasm and gas are associated with faulty digestion, including nervous indigestion, dyspepsia, pancreatic insufficiency, postcholecystectomy, gastroenteritis, biliary colic, postgastrectomy, spastic colon, heartburn, cardiospasm, pylorospasm, and dysphagia. *Contraindications:* Glaucoma and jaundice due to complete biliary obstruction. *Dosage:* One tablet swallowed whole with or immediately following each meal. *Supplied:* In bottles containing 60 tablets.

►Dornwal 400 Tablets
(Maltbie)

New dosage strength. Each tablet contains 400 mg. of amphenidone. *Indications:* For the treatment of anxiety and tension in various types of psychoneuroses, tension headache, behavior problems in children, and as adjunctive therapy in other conditions with psychosomatic components. *Dosage:* Usual dose is one tablet two or three times a day. *Supplied:* In bottles containing 100 or 500 tablets.

►Vasocon Ophthalmic Solution
(Smith, Miller & Patch)

Each cc. of sterile, buffered isotonic solution contains 0.1% naphazoline hydrochloride, 1.2% boric acid USP, anhydrous sodium carbonate, 0.002% phenylmercuric acetate (preservative) and sodium chloride. *Indications:* For relief of bacterial, allergic and vernal conjunctivitis, reduction of blepharospasm, control of hyperemia of the palpebral and bulbar conjunctivae, or any condition characterized by superficial corneal vascularity. *Dosage:* One to three drops to be placed in conjunctival sac of affected eye(s). *Supplied:* In 15 cc. plastic dropper bottles.

►Bamadex Sequels Capsules
(Lederle)

Each sustained-release capsule contains *d*-amphetamine sulfate 15 mg. and meprobamate 300 mg. *Indications:* As an adjunct to diet in the management of obesity. *Dosage:* One capsule daily, ½ hour before breakfast. *Supplied:* In bottles containing 30 capsules.

after 3 years' clinical experience:
here is what we now know about MER/29 a

We know that MER/29 lowers cholesterol in 8 out of 10 patients, even without dietary restrictions. In 576 patients studied by various physicians, average cholesterol levels dropped from 303 mg.% to 241 mg.% —an average decrease of 62 mg.%. We know that MER/29 reduces total sterols in both blood and tissue.

We know that MER/29 does this inhibiting the body's own product of cholesterol.

We know that its use in over 300,0 patients reaffirms the safety m gins established in early laborat and clinical data.

We know that, in some patients, concurrent clinical benefits attend the use of MER/29. Published papers on MER/29 therapy to date report improvement in 50 of the 79 anginal patients reported in these studies, and comparable results are being obtained in similar studies now progress. Among the other bene reported are:

decreased incidence and severity of anginal attacks
improved ECG patterns
diminished nitroglycerin dependen
increased sense of well-being

"During triparanol [MER/29] therapy there was a definite improvement in the electrocardiographic tracings in response to exercise in 3 of 11 subjects with angina pectoris."
—*Hollander, W.*, et al.: *J.A.M.A.* 174:*5 (Sept. 3) 1960.*

"Nitroglycerine requirements decreased in 3 [of 5 outpatient] patients, including the patient showing electrocardiographic improvement....Three [of 4 private male patients], after a lapse of some weeks, showed improvement in exercise electrocardiograms, which was sustained but not further improved in subsequent observations."
—*Corcoran, A. C.*, et al.: *Progr. Cardiovasc. Dis.* 2:*(Pt. 1) 576 (May) 1960.*

"Of the 45 patients with coronary artery disease followed for 1 year, 16 had a history of frequent anginal attacks. Fourteen of these spontaneously stated that their angina disappeared within 2 months of [MER/29] therapy.... In one patient...with persistent coronary insufficiency pattern (ST segment depressions in multiple leads), there was a complete reversion to a normal tracing during MER/29 therapy with associated clinical improvement in angina."
—*Lisan, P.: Progr. Cardiovasc. Dis.* 2: *(Pt. 1) 618 (May) 1960.*

book reviews

►Ciba Foundation Colloquia on Endocrinology; Human Pituitary Hormones

in honor of Professor B. A. Houssay, for Mem. R.S., editors for the Ciba Foundation G. E. W. Wolstenholme, O.B.E., M.R.C.P.; and Cecelia M. O'Connor, B.Sc. Volume 13. With 86 illustrations. Little, Brown and Company, Boston. 1960. $9.50

In Matthews' Textbook of Physiologic Chemistry of some 50 years ago, the section on the central nervous system was headed "The Master Tissue of the Body." Nobody then knew that this master tissue was a bit of the brain the size of a small pea. The Chairman of this Colloquium pointed out that we are now less certain of the precise identity of some hormones than we were 10 years ago, and raised the question whether the substance we ought to call a hormone is at present in the endocrine glands or in the blood flowing from this gland, or the substance which may be formed by metabolic changes in the blood stream, or in non-target organs from the material originally liberated by the secretory tissues. One may gather from that statement the fundamental nature of the discussions in this Colloquium of scientists in this field from great institutions of learning the world over. Every physician, indeed every person who desires to get an insight into the fundamental physiology of man, should purchase this book and study it earnestly.

►Cancer of the Nasopharynx: Its Natural History and Treatment

by M. Lederman, D.M.R., F.F.R., Deputy Director, Radiotherapy Department, Royal Marsden Hospital, etc. Charles C Thomas, Publisher, Springfield, Illinois. 1961. $6.75

The hope is expressed that this work will prove of interest to all concerned in the diagnosis and treatment of cancer located in the head and neck. Many specialists and all general practitioners would do well to purchase this little book and from study of its pages bring their knowledge of the diagnosis to the greatest possible perfection. It is not assumed that treatment will be rendered by any general physician.

a pair of postoperative patients:

both are free of pain—but only one is on

DILAUDID®

(Dihydromorphinone HCl)

swift, sure analgesia normally unmarred by nausea and vomiting

Before and after surgery, DILAUDID provides unexcelled analgesia. Its high therapeutic ratio is commonly reflected by lack of nausea and vomiting — and marked freedom from other side-effects such as dizziness and somnolence. DILAUDID thus facilitates early ambulation and simplifies postoperative management.

▲ by mouth ▲ by needle ▲ by rectum

2 mg., 3 mg., and 4 mg.

May be habit forming—usual precautions should be observed as with other opiate analgesics.

KNOLL PHARMACEUTICAL COMPANY • ORANGE, NEW JERSEY

►A Mount Sinai Hospital Monograph on Hypertension

edited by Milton Mendlowitz, M.D. Contributions to the Symposium by Members of the Staff of the Mount Sinai Hospital, New York. Grune & Stratton, New York. London. 1961. $6.50

In this Symposium review is made of our knowledge of the mechanism and of the management of the varieties of hypertension, presenting the most recent experience of many clinicians and investigators. It can hardly be doubted that much of what is written here will within a few years be inapplicable. It is well said that we do well to catch our breath, take stock, and determine our present position comprehensively.

►A Prelude to Medical History

by Felix Marti-Ibanez, M.D., Professor and Chairman of the Department of the History of Medicine, New York Medical College. MD Publications, Inc., New York. 1961. $5.75

One does not have to even scan any writing of this erudite scholar before attesting to its excellence. His foreword begins with "I am a lover of the spoken word. The written word endures longer than any other work of art, for even after the books containing it have disappeared, the word itself is remembered forever if it has sufficient karets of value." Divisions of the work are into The Fabric of Medicine, Prelude of Mist, A Tale of Three Rivers, Song of Mare Nostrum, Dawn at Midnight, The Smile of the Rebel, Three Windows to Medical History, The Vast Threshold.

Here we have authentic history rendered in the best of English composition. For those who can appreciate and enjoy such good things here is a real treat.

►Ciba Foundation Symposium on Quinones in Electron Transport

editors for the Ciba Foundation: G. E. W. Wolstenholme, O.B.E., M.B., M.R.C.P., and Cecelia M. O'Connor, B.S. with 82 illustrations. Little, Brown and Company, Boston. 1960. $11.00

This is a subject on which this reviewer's information is too meager to allow of formation of an opinion by review of the book. He recommends it because the qualifications of the participants in the Symposium attest its excellence.

►Clinical Disturbances of Renal Function

by Abraham G. White, M.D., F.A.C.P., Associate Visiting Physician and Chief of the Renal Disease Clinic, Queens Hospital Center, Jamaica, N.Y. W. B. Saunders Company, Philadelphia and London. 1961. $10.50

The author tells us that the book is meant for the practicing physician confronted with a patient whose kidneys are not functioning normally, either because of intrinsic disease or because of one of the many physiologic disturbances that may affect the kidneys. This sensible approach prepossesses one in favor of the book. The chapters, all the way from the first on The Nature of Renal Dysfunction, the Kidney as the "Final Common Halfway," to the sixteenth, a Review of Clinical Methods for the Evaluation of Renal Dysfunction, testify abundantly that the promise to the practicing physician has been kept in mind and that the content is of the sort to prove of the greatest helpfulness to the practicing physician.

►Intra-Abdominal Crises

by Kenneth D. Keele, M.D., F.R.C.P., Consultant Physician, Ashford Hospital, Middlesex (Staines Group) and Norman M. Matheson, F.R.C.S., M.R.C.P., F.A.C.S., Consultant Surgeon, Ashford Hospital, Middlesex (Staines Group), Butterworth, Inc., Washington. 1961. $10.00

In Part I General Features of Intra-abdominal Crises are presented; in Part 2, Local Abdominal Diseases, in Part 3, Intra-abdominal Crises as Part of General Disease. In the appendix may be found notes on Abdominal Crises.

From first to last the book is practical. It is written in the excellent language that one would expect from English physicians and surgeons, who generally know as well the art of leaving off as the art of going on.